Computer algebra independent integration tests

4-Trig-functions/4.1-Sine/4.1.10-c+d-x-^m-a+b-sin-^n

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Contents

Chapter 1

Introduction

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

The number of integrals in this report is [348]. This is test number [66].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

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

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

Sympy was called directly using Python.

1.2 Results

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

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

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

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

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

System	solved	Failed
Rubi	% 100.00 (348)	% 0.00 (0)
Mathematica	% 100.00 (348)	% 0.00 (0)
Maple	% 75.86 (264)	% 24.14 (84)
Maxima	% 55.75 (194)	% 44.25 (154)
Fricas	% 92.53 (322)	% 7.47 (26)
Sympy	% 32.47 (113)	% 67.53 (235)
Giac	% 46.55 (162)	% 53.45 (186)
Mupad	% 41.09 (143)	% 58.91 (205)

Table 1.1: Percentage solved for each CAS

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

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

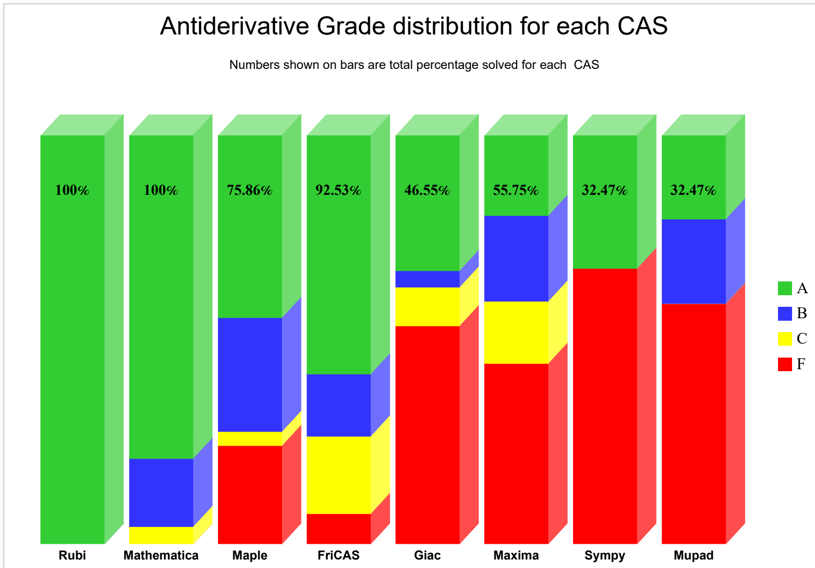
Table 1.2: Description of grading applied to integration result

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

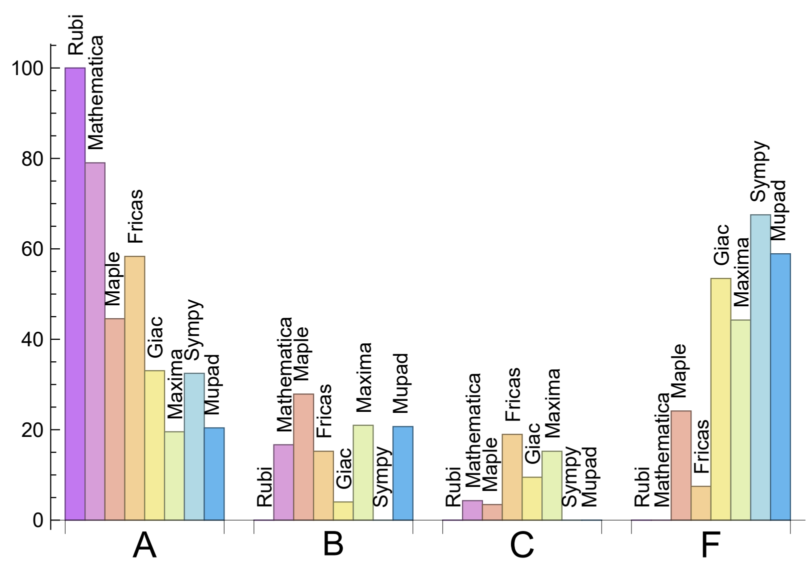
System	% A grade	% B grade	% C grade	% F grade
Rubi	100.00	0.00	0.00	0.00
Mathematica	79.02	16.67	4.31	0.00
Maple	44.54	27.87	3.45	24.14
Maxima	19.54	20.98	15.23	44.25
Fricas	58.33	15.23	18.97	7.47
Sympy	32.47	0.00	0.00	67.53
Giac	33.05	4.02	9.48	53.45
Mupad	20.40	20.69	0.00	58.91

Table 1.3: Antiderivative Grade distribution of each CAS

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



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



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

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

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

System	Number failed	Percentage normal failure	Percentage timeout failure	Percentage exception failure
Rubi	0	0.00 %	0.00 %	0.00 %
Mathematica	0	0.00 %	0.00 %	0.00 %
Maple	84	100.00 %	0.00 %	0.00 %
Maxima	154	33.77 %	12.34 %	53.90 %
Fricas	26	23.08 %	0.00 %	76.92 %
Sympy	235	78.30 %	21.70 %	0.00 %
Giac	186	70.43 %	26.34 %	3.23 %
Mupad	205	62.44 %	37.56 %	0.00 %

Table 1.4: Time and leaf size performance for each CAS

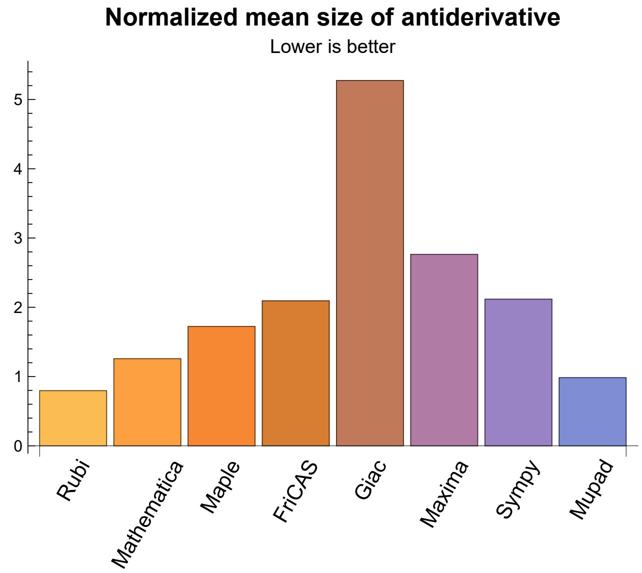
1.3 Performance

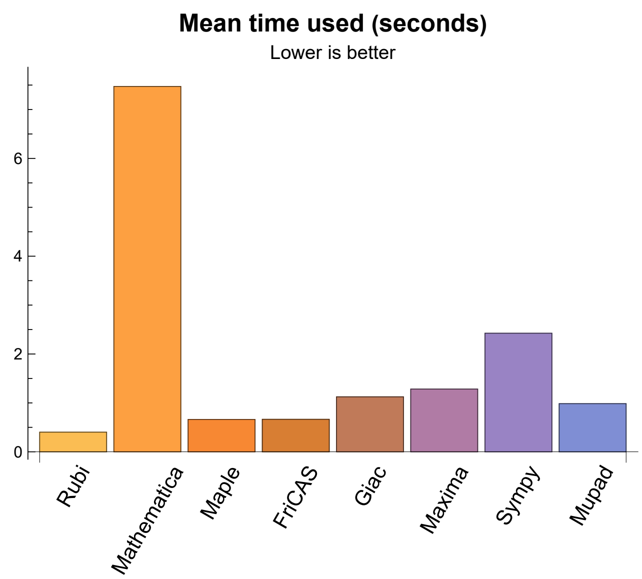
The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.40	218.88	0.80	117.50	1.00
Mathematica	7.47	476.05	1.26	122.50	0.95
Maple	0.66	320.27	1.72	162.00	1.44
Maxima	1.28	572.30	2.76	171.50	1.80
Fricas	0.66	769.40	2.09	188.00	1.45
Sympy	2.42	231.87	2.12	0.00	0.00
Giac	1.12	631.59	5.27	77.00	1.17
Mupad	0.98	94.38	0.98	16.00	0.65

Table 1.5: Time and leaf size performance for each CAS

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





1.4 list of integrals that has no closed form antiderivative

{26, 27, 31, 32, 36, 37, 65, 66, 71, 75, 76, 110, 111, 115, 116, 120, 121, 137, 138, 142, 143, 144, 145, 149, 150, 166, 167, 171, 172, 173, 177, 178, 183, 184, 189, 190, 195, 196, 201, 202, 207, 208, 213, 214, 215, 216, 217, 218, 219, 240, 241, 242, 243, 244, 255, 256, 273, 274, 279, 280, 285, 286, 290, 291, 292, 293, 314, 315, 316, 317, 318}

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

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi {}

Mathematica {23, 28, 29, 197, 203, 209, 210, 220, 221, 222, 224, 226, 228, 229, 230, 232, 234, 236, 237, 238, 245, 246, 247, 248, 249, 250, 269, 270, 275, 276, 282, 298, 299, 300, 304, 308, 310, 311, 312, 320, 321, 324, 325, 327, 329, 330, 331, 333, 335, 339, 341, 342, 343, 347}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

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

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

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

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

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

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

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

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

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

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

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

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

1.9.2 Important note about FriCAS and Giac/XCAS results

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

These will fail With error `Exception raised: NotImplementedError`

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

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

1.9.3 Important note about finding leaf size of antiderivative

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

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

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

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

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

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

  except Exception as ee:
         leafCount =1
```

1.9.4 Important note about Mupad results

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

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

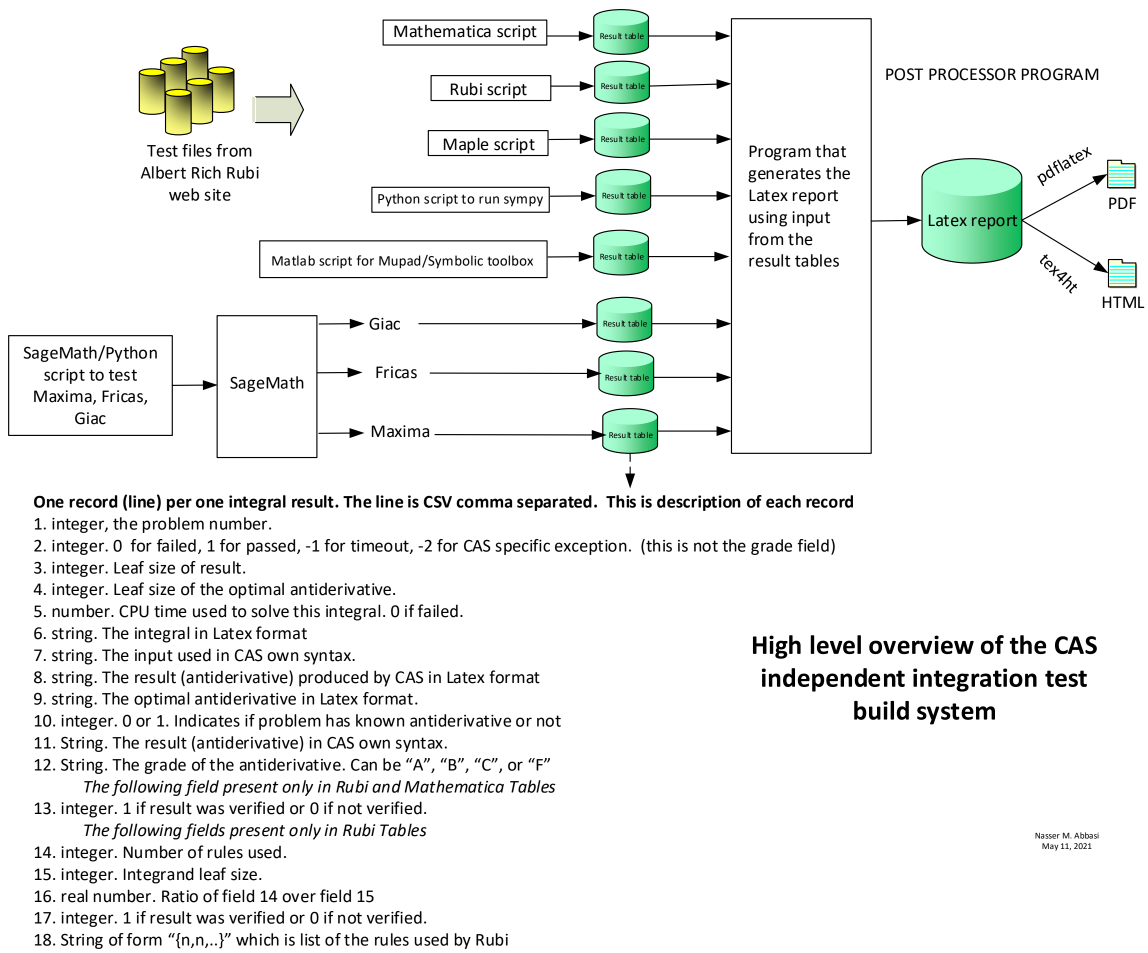
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

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

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

1.10 Design of the test system

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



Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

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

B grade: { }

C grade: { }

F grade: { }

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 30, 31, 32, 33, 36, 37, 45, 46, 47, 48, 49, 50, 51, 53, 54, 55, 56, 57, 58, 65, 66, 67, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 183, 184, 186, 188, 189, 190, 191, 193, 194, 195, 196, 197, 198, 200, 201, 202, 206, 207, 208, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 227, 229, 230, 231, 232, 233, 235, 236, 237, 239, 240, 241, 242, 243, 244, 251, 252, 254, 255, 256, 257, 258, 259, 261, 262, 263, 264, 265, 266, 267, 268, 269, 272, 273, 274, 276, 277, 278, 279, 280, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 305, 309, 310, 311, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 325, 326, 328, 332, 333, 334, 335, 336, 340, 342, 343, 344, 348 }

B grade: { 28, 29, 34, 35, 52, 59, 181, 182, 185, 187, 192, 199, 203, 204, 205, 209, 210, 211, 226, 228, 234, 238, 245, 246, 247, 248, 249, 250, 253, 260, 270, 271, 275, 281, 282, 283, 300, 301, 302, 303, 304, 306, 307, 308, 312, 323, 324, 327, 329, 330, 331, 337, 338, 339, 341, 345, 346, 347 }

C grade: { 38, 39, 40, 41, 42, 43, 44, 60, 61, 62, 63, 64, 68, 132, 133 }

F grade: { }

2.1.3 Maple

A grade: { 4, 5, 6, 7, 12, 13, 14, 15, 19, 20, 21, 22, 26, 27, 30, 31, 32, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 71, 75, 76, 98, 99, 100, 104, 105, 106, 110, 111, 115, 116, 120, 121, 137, 138, 142, 143, 144, 145, 149, 150, 154, 155, 156, 160, 161, 162, 166, 167, 171, 172, 173, 177, 178, 182, 183, 184, 188, 189, 190, 192, 195, 196, 200, 201, 202, 206, 207, 208, 212, 213, 214, 215, 216, 217, 218, 219, 223, 227, 235, 239, 240, 241, 242, 243, 244, 245, 248, 254, 255, 256, 259, 261, 262, 265, 266, 267, 268, 272, 273, 274, 276, 278, 279, 280, 284, 285, 286, 290, 291, 292, 293, 297, 305, 309, 313, 314, 315, 316, 317, 318, 328, 332, 340, 348 }

B grade: { 1, 2, 3, 8, 9, 10, 11, 16, 17, 18, 23, 24, 25, 28, 29, 33, 34, 35, 95, 96, 97, 101, 102, 103, 107, 108, 109, 112, 113, 114, 117, 118, 119, 151, 152, 153, 157, 158, 159, 165, 170, 179, 180, 181, 185, 186, 187, 191, 193, 194, 197, 198, 199, 203, 204, 205, 209, 210, 211, 222, 226, 230, 231, 234, 238, 251, 252, 253, 257, 258, 260, 263, 264, 269, 270, 271, 275, 277, 281, 282, 283, 296, 300, 301, 304, 308, 312, 320, 323, 327, 331, 335, 336, 339, 343, 344, 347 }

C grade: { 77, 78, 79, 80, 81, 82, 83, 122, 123, 124, 319, 322 }

F grade: { 67, 68, 69, 70, 72, 73, 74, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 139, 140, 141, 146, 147, 148, 163, 164, 168, 169, 174, 175, 176, 220, 221, 224, 225, 228, 229, 232, 233, 236, 237, 246, 247, 249, 250, 287, 288, 289, 294, 295, 298, 299, 302, 303, 306, 307, 310, 311, 321, 324, 325, 326, 329, 330, 333, 334, 337, 338, 341, 342, 345, 346 }

2.1.4 Maxima

A grade: { 4, 19, 26, 27, 31, 36, 37, 65, 66, 71, 75, 76, 103, 115, 116, 137, 138, 142, 143, 144, 145, 149, 150, 159, 166, 167, 171, 172, 173, 177, 178, 182, 200, 215, 216, 217, 218, 219, 240, 241, 242, 243, 244, 253, 254, 255, 256, 264, 265, 266, 272, 273, 274, 279, 284, 290, 291, 297, 305, 309, 314, 315, 316, 317, 318, 332, 340, 348 }

B grade: { 1, 2, 3, 8, 9, 10, 11, 16, 17, 18, 23, 24, 25, 28, 29, 30, 33, 34, 35, 95, 96, 97, 101, 102, 107, 108, 109, 112, 113, 114, 117, 118, 119, 151, 152, 153, 157, 158, 179, 180, 181, 185, 186, 187, 188, 194, 197, 198, 199, 203, 204, 205, 206, 210, 211, 212, 251, 252, 257, 258, 259, 260, 263, 269, 270, 271, 275, 276, 277, 278, 281, 282, 283 }

C grade: { 5, 6, 7, 12, 13, 14, 15, 20, 21, 22, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 98, 99, 100, 104, 105, 106, 154, 155, 156, 160, 161, 162, 261, 262, 267, 268 }

F grade: { 32, 67, 68, 69, 70, 72, 73, 74, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 110, 111, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 139, 140, 141, 146, 147, 148, 163, 164, 165, 168, 169, 170, 174, 175, 176, 183, 184, 189, 190, 191, 192, 193, 195, 196, 201, 202, 207, 208, 209, 213, 214, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 245, 246, 247, 248, 249, 250, 280, 285, 286, 287, 288, 289, 292, 293, 294, 295, 296, 298, 299, 300, 301, 302, 303, 304, 306, 307, 308, 310, 311, 312, 313, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 333, 334, 335, 336, 337, 338, 339, 341, 342, 343, 344, 345, 346, 347 }

2.1.5 FriCAS

A grade: { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 16, 17, 18, 19, 20, 21, 26, 27, 30, 31, 32, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 69, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 110, 111, 114, 115, 116, 120, 121, 137, 138, 142, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 166, 167, 171, 172, 173, 174, 175, 176, 177, 178, 182, 183, 184, 188, 189, 190, 193, 194, 195, 196, 201, 202, 207, 208, 213, 214, 215, 216, 217, 218, 219, 223, 227, 231, 235, 240, 241, 242, 243, 244, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 272, 273, 274, 277, 278, 279, 280, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 297, 301, 305, 309, 313, 314, 315, 316, 317, 318, 319, 328, 332, 336, 340, 344, 348 }

B grade: { 7, 14, 15, 22, 25, 29, 35, 52, 106, 108, 109, 113, 118, 119, 165, 170, 180, 181, 186, 187, 192, 199, 200, 205, 206, 211, 212, 222, 226, 230, 234, 238, 239, 245, 248, 253, 271, 276, 283, 296, 300, 304, 308, 312, 320, 322, 323, 327, 331, 335, 339, 343, 347 }

C grade: { 23, 24, 28, 33, 34, 107, 112, 117, 163, 164, 168, 169, 179, 185, 191, 197, 198, 203, 204, 209, 210, 220, 221, 224, 225, 228, 229, 232, 233, 236, 237, 246, 247, 249, 250, 251, 252, 269, 270, 275, 281, 282, 294, 295, 298, 299, 302, 303, 306, 307, 310, 311, 321, 324, 325, 326, 329, 330, 333, 334, 337, 338, 341, 342, 345, 346 }

F grade: { 67, 68, 70, 91, 92, 93, 94, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 139, 140, 141, 144 }

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 8, 9, 10, 11, 16, 17, 18, 19, 26, 27, 31, 32, 36, 37, 60, 61, 62, 63, 64, 65, 66, 71, 75, 76, 95, 96, 97, 101, 102, 103, 109, 110, 111, 114, 115, 116, 119, 120, 121, 137, 138, 142, 143, 144, 149, 150, 151, 152, 153, 157, 158, 159, 166, 177, 178, 181, 182, 183, 184, 187, 188, 189, 190, 193, 194, 201, 202, 207, 208, 213, 214, 215, 216, 217, 218, 219, 223, 240, 241, 242, 243, 244, 254, 255, 256, 257, 258, 259, 260, 263, 264, 265, 266, 273, 274, 279, 280, 285, 286, 290, 291, 292, 293, 297, 314, 315, 316, 317, 318 }

B grade: { }

C grade: { }

F grade: { 5, 6, 7, 12, 13, 14, 15, 20, 21, 22, 23, 24, 25, 28, 29, 30, 33, 34, 35, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 67, 68, 69, 70, 72, 73, 74, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 98, 99, 100, 104, 105, 106, 107, 108, 112, 113, 117, 118, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 139, 140, 141, 145, 146, 147, 148, 154, 155, 156, 160, 161, 162, 163, 164, 165, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 179, 180, 185, 186, 191, 192, 195, 196, 197, 198, 199, 200, 203, 204, 205, 206, 209, 210, 211, 212, 220, 221, 222, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 245, 246, 247, 248, 249, 250, 251, 252, 253, 261, 262, 267, 268, 269, 270, 271, 272, 275, 276, 277, 278, 281, 282, 283, 284, 287, 288, 289, 294, 295, 296, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348 }

2.1.7 Giac

A grade: { 1, 2, 3, 4, 8, 9, 10, 11, 16, 17, 18, 19, 26, 27, 31, 32, 36, 65, 66, 71, 75, 76, 95, 96, 97, 101, 102, 103, 110, 111, 115, 116, 120, 121, 122, 123, 124, 137, 138, 142, 143, 144, 145, 149, 150, 151, 152, 153, 157, 158, 159, 166, 167, 171, 173, 177, 178, 182, 183, 184, 188, 189, 190, 194, 195, 196, 200, 201, 206, 212, 215, 216, 217, 218, 219, 223, 227, 231, 235, 239, 240, 241, 242, 243, 244, 254, 255, 256, 260, 266, 272, 273, 274, 278, 279, 284, 290, 291, 292, 293, 297, 301, 305, 309, 313, 314, 315, 316, 317, 318, 328, 332, 336, 340, 348 }

B grade: { 6, 13, 21, 30, 99, 105, 109, 114, 119, 155, 161, 181, 277, 344 }

C grade: { 5, 7, 12, 14, 15, 20, 38, 39, 40, 41, 45, 46, 47, 48, 53, 54, 55, 56, 60, 61, 62, 98, 100, 104, 125, 126, 127, 154, 156, 160, 261, 262, 267 }

F grade: { 22, 23, 24, 25, 28, 29, 33, 34, 35, 37, 42, 43, 44, 49, 50, 51, 52, 57, 58, 59, 63, 64, 67, 68, 69, 70, 72, 73, 74, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 106, 107, 108, 112, 113, 117, 118, 128, 129, 130, 131, 132, 133, 134, 135, 136, 139, 140, 141, 146, 147, 148, 162, 163, 164, 165, 168, 169, 170, 172, 174, 175, 176, 179, 180, 185, 186, 187, 191, 192, 193, 197, 198, 199, 202, 203, 204, 205, 207, 208, 209, 210, 211, 213, 214, 220, 221, 222, 224, 225, 226, 228, 229, 230, 232, 233, 234, 236, 237, 238, 245, 246, 247, 248, 249, 250, 251, 252, 253, 257, 258, 259, 263, 264, 265, 268, 269, 270, 271, 275, 276, 280, 281, 282, 283, 285, 286, 287, 288, 289, 294, 295, 296, 298, 299, 300, 302, 303, 304, 306, 307, 308, 310, 311, 312, 319, 320, 321, 322, 323, 324, 325, 326, 327, 329, 330, 331, 333, 334, 335, 337, 338, 339, 341, 342, 343, 345, 346, 347 }

2.1.8 Mupad

A grade: { 26, 27, 31, 32, 36, 37, 65, 66, 71, 75, 76, 110, 111, 115, 116, 120, 121, 137, 138, 142, 143, 144, 145, 149, 150, 166, 167, 171, 172, 173, 177, 178, 183, 184, 189, 190, 195, 196, 201, 202, 207, 208, 213, 214, 215, 216, 217, 218, 219, 240, 241, 242, 243, 244, 255, 256, 273, 274, 279, 280, 285, 286, 290, 291, 292, 293, 314, 315, 316, 317, 318 }

B grade: { 1, 2, 3, 4, 8, 9, 10, 11, 16, 17, 18, 19, 30, 67, 69, 70, 95, 96, 97, 101, 102, 103, 109, 114, 119, 122, 123, 124, 151, 152, 153, 157, 158, 159, 181, 182, 187, 188, 193, 194, 200, 206, 212, 223, 227, 231, 235, 239, 254, 257, 258, 259, 260, 263, 264, 265, 266, 272, 277, 278, 284, 297, 301, 305, 309, 313, 328, 332, 336, 340, 344, 348 }

C grade: { }

F grade: { 5, 6, 7, 12, 13, 14, 15, 20, 21, 22, 23, 24, 25, 28, 29, 33, 34, 35, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 68, 72, 73, 74, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 98, 99, 100, 104, 105, 106, 107, 108, 112, 113, 117, 118, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 139, 140, 141, 146, 147, 148, 154, 155, 156, 160, 161, 162, 163, 164, 165, 168, 169, 170, 174, 175, 176, 179, 180, 185, 186, 191, 192, 197, 198, 199, 203, 204, 205, 209, 210, 211, 220, 221, 222, 224, 225, 226, 228, 229, 230, 232, 233, 234, 236, 237, 238, 245, 246, 247, 248, 249, 250, 251, 252, 253, 261, 262, 267, 268, 269, 270, 271, 275, 276, 281, 282, 283, 287, 288, 289, 294, 295, 296, 298, 299, 300, 302, 303, 304, 306, 307, 308, 310, 311, 312, 319, 320, 321, 322, 323, 324, 325, 326, 327, 329, 330, 331, 333, 334, 335, 337, 338, 339, 341, 342, 343, 345, 346, 347 }

2.2 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	77	551	490	170	311	171	221
normalized size	1	1.00	0.84	5.99	5.33	1.85	3.38	1.86	2.40
time (sec)	N/A	0.091	0.386	0.023	0.352	0.868	3.430	0.315	0.791

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	62	308	285	110	202	111	147
normalized size	1	1.00	0.87	4.34	4.01	1.55	2.85	1.56	2.07
time (sec)	N/A	0.065	0.224	0.019	0.431	0.703	1.609	1.611	0.621

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	45	148	141	63	112	65	84
normalized size	1	1.00	0.90	2.96	2.82	1.26	2.24	1.30	1.68
time (sec)	N/A	0.039	0.195	0.019	0.659	0.574	0.728	1.045	0.547

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	27	52	53	30	46	31	35
normalized size	1	1.00	0.96	1.86	1.89	1.07	1.64	1.11	1.25
time (sec)	N/A	0.016	0.077	0.018	0.482	0.689	0.246	1.883	0.527

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	49	73	141	78	0	597	-1
normalized size	1	1.00	0.96	1.43	2.76	1.53	0.00	11.71	-0.02
time (sec)	N/A	0.098	0.100	0.023	0.447	0.851	0.000	2.992	0.000

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	66	107	164	124	0	521	-1
normalized size	1	1.00	0.92	1.49	2.28	1.72	0.00	7.24	-0.01
time (sec)	N/A	0.109	0.229	0.020	0.520	0.628	0.000	1.957	0.000

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	B	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	87	145	199	209	0	5727	-1
normalized size	1	1.00	0.84	1.39	1.91	2.01	0.00	55.07	-0.01
time (sec)	N/A	0.139	0.728	0.020	0.623	0.692	0.000	1.304	0.000

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	161	161	132	1030	735	286	660	222	349
normalized size	1	1.00	0.82	6.40	4.57	1.78	4.10	1.38	2.17
time (sec)	N/A	0.103	0.678	0.093	0.462	0.647	6.325	0.367	1.089

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	106	587	442	189	456	153	229
normalized size	1	1.00	0.79	4.38	3.30	1.41	3.40	1.14	1.71
time (sec)	N/A	0.074	0.443	0.019	0.371	0.691	3.449	0.318	0.847

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	77	289	232	112	264	94	179
normalized size	1	1.00	0.81	3.04	2.44	1.18	2.78	0.99	1.88
time (sec)	N/A	0.054	0.323	0.019	0.398	0.671	1.571	0.825	0.202

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	52	112	96	54	126	48	57
normalized size	1	1.00	0.95	2.04	1.75	0.98	2.29	0.87	1.04
time (sec)	N/A	0.027	0.155	0.018	0.303	0.824	0.672	0.421	0.095

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	65	105	160	88	0	612	-1
normalized size	1	1.00	0.83	1.35	2.05	1.13	0.00	7.85	-0.01
time (sec)	N/A	0.168	0.110	0.023	0.423	0.940	0.000	0.663	0.000

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	75	156	171	130	0	535	-1
normalized size	1	1.00	0.93	1.93	2.11	1.60	0.00	6.60	-0.01
time (sec)	N/A	0.139	0.419	0.021	0.614	0.984	0.000	1.367	0.000

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	B	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	101	193	206	223	0	5141	-1
normalized size	1	1.00	0.89	1.71	1.82	1.97	0.00	45.50	-0.01
time (sec)	N/A	0.192	1.200	0.020	0.771	0.947	0.000	1.849	0.000

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	B	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	122	229	256	341	0	7832	-1
normalized size	1	1.00	0.75	1.41	1.58	2.10	0.00	48.35	-0.01
time (sec)	N/A	0.181	1.245	0.021	0.860	0.937	0.000	1.515	0.000

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	150	1023	934	351	772	351	533
normalized size	1	1.00	0.67	4.55	4.15	1.56	3.43	1.56	2.37
time (sec)	N/A	0.250	1.059	0.058	0.407	0.851	10.995	0.518	1.547

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	127	560	541	227	495	231	365
normalized size	1	1.00	0.73	3.20	3.09	1.30	2.83	1.32	2.09
time (sec)	N/A	0.159	0.993	0.020	0.377	0.629	5.737	0.328	1.109

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	86	265	270	131	284	137	174
normalized size	1	1.00	0.70	2.15	2.20	1.07	2.31	1.11	1.41
time (sec)	N/A	0.096	0.458	0.019	0.456	0.614	3.043	2.027	0.980

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	59	95	104	62	126	69	79
normalized size	1	1.00	0.79	1.27	1.39	0.83	1.68	0.92	1.05
time (sec)	N/A	0.042	0.187	0.018	0.305	0.593	1.255	1.214	0.630

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	102	167	274	154	0	6296	-1
normalized size	1	1.00	0.84	1.38	2.26	1.27	0.00	52.03	-0.01
time (sec)	N/A	0.245	0.250	0.018	0.510	0.602	0.000	1.505	0.000

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	175	240	301	238	0	1000	-1
normalized size	1	1.00	1.21	1.66	2.08	1.64	0.00	6.90	-0.01
time (sec)	N/A	0.242	1.070	0.021	0.576	0.679	0.000	1.059	0.000

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	221	313	336	401	0	0	-1
normalized size	1	1.00	1.20	1.70	1.83	2.18	0.00	0.00	-0.01
time (sec)	N/A	0.354	0.821	0.021	0.713	0.584	0.000	0.000	0.000

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	221	633	706	816	0	0	-1
normalized size	1	1.00	1.19	3.42	3.82	4.41	0.00	0.00	-0.01
time (sec)	N/A	0.137	0.527	0.122	0.677	0.728	0.000	0.000	0.000

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	148	361	392	500	0	0	-1
normalized size	1	1.00	1.20	2.93	3.19	4.07	0.00	0.00	-0.01
time (sec)	N/A	0.088	0.323	0.060	0.683	0.782	0.000	0.000	0.000

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	134	164	174	252	0	0	-1
normalized size	1	1.00	2.00	2.45	2.60	3.76	0.00	0.00	-0.01
time (sec)	N/A	0.039	0.074	0.007	0.698	0.731	0.000	0.000	0.000

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	17	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.022	6.522	0.089	0.000	0.643	0.000	0.000	0.000

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	17	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.021	7.353	0.070	0.000	0.653	0.000	0.000	0.000

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	478	541	1650	672	0	0	-1
normalized size	1	1.00	4.23	4.79	14.60	5.95	0.00	0.00	-0.01
time (sec)	N/A	0.213	6.959	0.108	0.723	0.901	0.000	0.000	0.000

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	181	276	555	379	0	0	-1
normalized size	1	1.00	2.18	3.33	6.69	4.57	0.00	0.00	-0.01
time (sec)	N/A	0.136	4.193	0.066	0.514	0.801	0.000	0.000	0.000

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	52	39	217	46	0	1251	55
normalized size	1	1.00	1.79	1.34	7.48	1.59	0.00	43.14	1.90
time (sec)	N/A	0.028	0.088	0.018	0.530	0.778	0.000	3.367	1.176

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.040	6.658	0.243	0.000	0.598	0.000	0.000	0.000

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.037	6.723	0.388	0.000	0.641	0.000	0.000	0.000

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	309	528	1056	3877	1736	0	0	-1
normalized size	1	1.00	1.71	3.42	12.55	5.62	0.00	0.00	-0.00
time (sec)	N/A	0.226	5.540	0.192	3.890	0.918	0.000	0.000	0.000

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	471	548	1934	968	0	0	-1
normalized size	1	1.00	2.62	3.04	10.74	5.38	0.00	0.00	-0.01
time (sec)	N/A	0.136	7.644	0.115	1.876	0.868	0.000	0.000	0.000

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	292	246	769	452	0	0	-1
normalized size	1	1.00	2.68	2.26	7.06	4.15	0.00	0.00	-0.01
time (sec)	N/A	0.067	2.033	0.088	0.542	0.565	0.000	0.000	0.000

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.039	32.344	2.905	0.000	0.717	0.000	0.000	0.000

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.038	35.644	4.458	0.000	0.743	0.000	0.000	0.000

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	124	233	261	190	0	1246	-1
normalized size	1	1.00	0.64	1.19	1.34	0.97	0.00	6.39	-0.01
time (sec)	N/A	0.434	0.123	0.019	0.759	0.760	0.000	1.946	0.000

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	125	188	242	156	0	779	-1
normalized size	1	1.00	0.74	1.11	1.42	0.92	0.00	4.58	-0.01
time (sec)	N/A	0.242	0.106	0.012	1.755	0.637	0.000	2.181	0.000

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	123	145	196	127	0	426	-1
normalized size	1	1.00	0.87	1.02	1.38	0.89	0.00	3.00	-0.01
time (sec)	N/A	0.176	0.104	0.010	1.382	0.684	0.000	0.624	0.000

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	121	99	159	107	0	168	-1
normalized size	1	1.00	1.03	0.85	1.36	0.91	0.00	1.44	-0.01
time (sec)	N/A	0.133	0.064	0.012	0.848	0.822	0.000	0.470	0.000

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	148	140	129	146	0	0	-1
normalized size	1	1.00	1.06	1.01	0.93	1.05	0.00	0.00	-0.01
time (sec)	N/A	0.204	0.337	0.010	1.522	0.690	0.000	0.000	0.000

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	168	162	180	129	208	0	0	-1
normalized size	1	1.00	0.96	1.07	0.77	1.24	0.00	0.00	-0.01
time (sec)	N/A	0.238	0.638	0.011	1.961	0.709	0.000	0.000	0.000

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	208	220	129	297	0	0	-1
normalized size	1	1.00	1.08	1.14	0.67	1.54	0.00	0.00	-0.01
time (sec)	N/A	0.297	0.499	0.010	1.055	0.828	0.000	0.000	0.000

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F(-1)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	194	242	295	258	0	1310	-1
normalized size	1	1.00	0.84	1.05	1.28	1.12	0.00	5.67	-0.00
time (sec)	N/A	0.442	2.319	0.040	1.477	0.727	0.000	1.163	0.000

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	175	197	274	195	0	806	-1
normalized size	1	1.00	0.86	0.97	1.35	0.96	0.00	3.97	-0.00
time (sec)	N/A	0.360	1.786	0.033	0.512	0.651	0.000	0.920	0.000

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	149	150	229	148	0	428	-1
normalized size	1	1.00	0.94	0.95	1.45	0.94	0.00	2.71	-0.01
time (sec)	N/A	0.285	0.556	0.033	0.844	0.820	0.000	1.156	0.000

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	126	108	187	114	0	163	-1
normalized size	1	1.00	0.97	0.83	1.44	0.88	0.00	1.25	-0.01
time (sec)	N/A	0.234	0.241	0.036	0.774	0.779	0.000	1.135	0.000

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	149	145	135	138	0	0	-1
normalized size	1	1.00	1.10	1.07	1.00	1.02	0.00	0.00	-0.01
time (sec)	N/A	0.254	0.427	0.034	1.923	0.872	0.000	0.000	0.000

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	158	189	135	209	0	0	-1
normalized size	1	1.00	0.93	1.11	0.79	1.23	0.00	0.00	-0.01
time (sec)	N/A	0.328	1.486	0.035	1.201	0.815	0.000	0.000	0.000

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	244	230	135	328	0	0	-1
normalized size	1	1.00	1.13	1.06	0.62	1.52	0.00	0.00	-0.00
time (sec)	N/A	0.336	2.131	0.034	1.973	0.621	0.000	0.000	0.000

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	C	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	247	247	661	273	135	422	0	0	-1
normalized size	1	1.00	2.68	1.11	0.55	1.71	0.00	0.00	-0.00
time (sec)	N/A	0.419	4.835	0.034	1.046	0.850	0.000	0.000	0.000

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F(-1)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	410	542	476	543	371	0	2465	-1
normalized size	1	1.00	1.32	1.16	1.32	0.90	0.00	6.01	-0.00
time (sec)	N/A	1.127	3.312	0.029	0.539	0.919	0.000	2.774	0.000

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	354	354	389	384	499	300	0	1538	-1
normalized size	1	1.00	1.10	1.08	1.41	0.85	0.00	4.34	-0.00
time (sec)	N/A	0.972	1.690	0.022	2.874	0.769	0.000	3.207	0.000

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	266	296	422	246	0	842	-1
normalized size	1	1.00	0.88	0.97	1.39	0.81	0.00	2.77	-0.00
time (sec)	N/A	0.498	0.813	0.020	1.032	0.698	0.000	0.981	0.000

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	202	210	375	212	0	330	-1
normalized size	1	1.00	0.79	0.82	1.46	0.82	0.00	1.28	-0.00
time (sec)	N/A	0.405	0.600	0.024	1.753	0.700	0.000	0.931	0.000

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	300	288	252	274	0	0	-1
normalized size	1	1.00	1.11	1.07	0.93	1.01	0.00	0.00	-0.00
time (sec)	N/A	0.564	1.017	0.023	1.683	0.743	0.000	0.000	0.000

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	292	292	496	368	253	388	0	0	-1
normalized size	1	1.00	1.70	1.26	0.87	1.33	0.00	0.00	-0.00
time (sec)	N/A	0.710	2.417	0.021	1.024	0.930	0.000	0.000	0.000

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	C	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	356	356	1429	450	253	549	0	0	-1
normalized size	1	1.00	4.01	1.26	0.71	1.54	0.00	0.00	-0.00
time (sec)	N/A	0.797	6.404	0.023	2.399	0.736	0.000	0.000	0.000

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	A	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	60	87	106	72	117	220	-1
normalized size	1	1.00	0.69	1.00	1.22	0.83	1.34	2.53	-0.01
time (sec)	N/A	0.109	0.014	0.020	1.693	0.754	21.827	0.926	0.000

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	A	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	69	65	84	54	85	176	-1
normalized size	1	1.00	1.06	1.00	1.29	0.83	1.31	2.71	-0.02
time (sec)	N/A	0.058	0.012	0.010	0.522	0.807	2.102	0.758	0.000

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	A	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	59	42	67	38	54	136	-1
normalized size	1	1.00	1.28	0.91	1.46	0.83	1.17	2.96	-0.02
time (sec)	N/A	0.034	0.008	0.011	0.655	0.695	1.162	0.366	0.000

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	64	60	38	57	80	0	-1
normalized size	1	1.00	1.00	0.94	0.59	0.89	1.25	0.00	-0.02
time (sec)	N/A	0.065	0.024	0.010	2.393	0.652	3.425	0.000	0.000

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	C	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	111	79	38	69	114	0	-1
normalized size	1	1.00	1.28	0.91	0.44	0.79	1.31	0.00	-0.01
time (sec)	N/A	0.093	0.088	0.011	1.066	0.599	24.496	0.000	0.000

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.031	15.907	0.086	0.000	0.620	0.000	0.000	0.000

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.031	15.270	0.089	0.000	0.657	0.000	0.000	0.000

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	33	0	0	0	0	0	36
normalized size	1	1.00	0.87	0.00	0.00	0.00	0.00	0.00	0.95
time (sec)	N/A	0.061	0.470	0.237	0.000	0.000	0.000	0.000	1.052

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	185	0	0	0	0	0	-1
normalized size	1	1.00	2.98	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.107	4.687	0.205	0.000	0.000	0.000	0.000	0.000

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	35	0	0	48	0	0	140
normalized size	1	1.00	0.83	0.00	0.00	1.14	0.00	0.00	3.33
time (sec)	N/A	0.060	0.465	0.215	0.000	0.642	0.000	0.000	3.107

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	58	0	0	0	0	0	253
normalized size	1	1.00	0.70	0.00	0.00	0.00	0.00	0.00	3.05
time (sec)	N/A	0.086	0.681	0.270	0.000	0.000	0.000	0.000	4.486

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.042	0.873	0.336	0.000	0.707	0.000	0.000	0.000

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	251	0	0	184	0	0	-1
normalized size	1	1.00	0.94	0.00	0.00	0.69	0.00	0.00	-0.00
time (sec)	N/A	0.303	10.577	0.312	0.000	0.742	0.000	0.000	0.000

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	211	0	0	134	0	0	-1
normalized size	1	1.00	1.30	0.00	0.00	0.83	0.00	0.00	-0.01
time (sec)	N/A	0.217	0.710	0.202	0.000	0.814	0.000	0.000	0.000

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	121	0	0	94	0	0	-1
normalized size	1	1.00	0.95	0.00	0.00	0.74	0.00	0.00	-0.01
time (sec)	N/A	0.088	0.048	0.083	0.000	0.710	0.000	0.000	0.000

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	17	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.019	5.708	0.056	0.000	0.744	0.000	0.000	0.000

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.037	1.234	0.052	0.000	0.550	0.000	0.000	0.000

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	79	454	0	52	0	0	-1
normalized size	1	1.00	1.00	5.75	0.00	0.66	0.00	0.00	-0.01
time (sec)	N/A	0.077	0.020	0.159	0.000	0.772	0.000	0.000	0.000

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	353	0	52	0	0	-1
normalized size	1	1.00	1.00	4.71	0.00	0.69	0.00	0.00	-0.01
time (sec)	N/A	0.073	0.018	0.090	0.000	0.644	0.000	0.000	0.000

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	79	290	0	52	0	0	-1
normalized size	1	1.00	1.00	3.67	0.00	0.66	0.00	0.00	-0.01
time (sec)	N/A	0.071	0.018	0.088	0.000	0.777	0.000	0.000	0.000

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	378	0	48	0	0	-1
normalized size	1	1.00	1.00	5.04	0.00	0.64	0.00	0.00	-0.01
time (sec)	N/A	0.066	0.015	0.084	0.000	0.595	0.000	0.000	0.000

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	63	426	0	48	0	0	-1
normalized size	1	1.00	0.91	6.17	0.00	0.70	0.00	0.00	-0.01
time (sec)	N/A	0.068	0.030	0.088	0.000	0.750	0.000	0.000	0.000

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	65	529	0	52	0	0	-1
normalized size	1	1.00	0.92	7.45	0.00	0.73	0.00	0.00	-0.01
time (sec)	N/A	0.071	0.019	0.094	0.000	0.686	0.000	0.000	0.000

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	79	599	0	52	0	0	-1
normalized size	1	1.00	1.00	7.58	0.00	0.66	0.00	0.00	-0.01
time (sec)	N/A	0.072	0.016	0.099	0.000	0.754	0.000	0.000	0.000

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	118	0	0	77	0	0	-1
normalized size	1	1.00	1.22	0.00	0.00	0.79	0.00	0.00	-0.01
time (sec)	N/A	0.162	0.352	0.139	0.000	0.715	0.000	0.000	0.000

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	120	0	0	77	0	0	-1
normalized size	1	1.00	1.17	0.00	0.00	0.75	0.00	0.00	-0.01
time (sec)	N/A	0.143	0.357	0.120	0.000	0.789	0.000	0.000	0.000

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	116	0	0	77	0	0	-1
normalized size	1	1.00	1.17	0.00	0.00	0.78	0.00	0.00	-0.01
time (sec)	N/A	0.143	0.325	0.188	0.000	0.640	0.000	0.000	0.000

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	120	0	0	69	0	0	-1
normalized size	1	1.00	1.17	0.00	0.00	0.67	0.00	0.00	-0.01
time (sec)	N/A	0.134	0.298	0.135	0.000	0.678	0.000	0.000	0.000

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	99	0	0	64	0	0	-1
normalized size	1	1.00	1.19	0.00	0.00	0.77	0.00	0.00	-0.01
time (sec)	N/A	0.130	0.249	0.201	0.000	0.701	0.000	0.000	0.000

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	117	0	0	77	0	0	-1
normalized size	1	1.00	1.16	0.00	0.00	0.76	0.00	0.00	-0.01
time (sec)	N/A	0.137	0.330	0.150	0.000	0.757	0.000	0.000	0.000

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	121	0	0	77	0	0	-1
normalized size	1	1.00	1.25	0.00	0.00	0.79	0.00	0.00	-0.01
time (sec)	N/A	0.173	0.436	0.155	0.000	0.799	0.000	0.000	0.000

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	29	0	0	0	0	0	-1
normalized size	1	1.00	0.69	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.123	0.548	0.232	0.000	0.000	0.000	0.000	0.000

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	87	0	0	0	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.209	0.589	0.218	0.000	0.000	0.000	0.000	0.000

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	29	0	0	0	0	0	-1
normalized size	1	1.00	0.69	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.106	0.503	0.201	0.000	0.000	0.000	0.000	0.000

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	57	0	0	0	0	0	-1
normalized size	1	1.00	0.69	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.133	2.399	0.232	0.000	0.000	0.000	0.000	0.000

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	123	482	462	168	264	157	191
normalized size	1	1.00	1.37	5.36	5.13	1.87	2.93	1.74	2.12
time (sec)	N/A	0.118	0.928	0.038	0.335	0.671	1.787	0.353	0.259

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	81	241	239	102	151	95	112
normalized size	1	1.00	1.19	3.54	3.51	1.50	2.22	1.40	1.65
time (sec)	N/A	0.088	0.524	0.026	0.319	0.776	0.805	0.286	0.153

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	51	90	93	51	68	47	54
normalized size	1	1.00	1.13	2.00	2.07	1.13	1.51	1.04	1.20
time (sec)	N/A	0.042	0.389	0.024	0.439	0.721	0.315	3.743	0.097

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	54	96	171	93	0	712	-1
normalized size	1	1.00	0.84	1.50	2.67	1.45	0.00	11.12	-0.02
time (sec)	N/A	0.150	0.329	0.031	0.511	0.584	0.000	0.402	0.000

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	110	141	196	135	0	578	-1
normalized size	1	1.00	1.25	1.60	2.23	1.53	0.00	6.57	-0.01
time (sec)	N/A	0.214	0.519	0.029	0.627	0.787	0.000	0.880	0.000

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	104	177	265	228	0	6157	-1
normalized size	1	1.00	0.85	1.44	2.15	1.85	0.00	50.06	-0.01
time (sec)	N/A	0.257	0.729	0.026	0.721	0.813	0.000	1.356	0.000

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	237	237	216	1135	969	368	779	339	452
normalized size	1	1.00	0.91	4.79	4.09	1.55	3.29	1.43	1.91
time (sec)	N/A	0.295	1.448	0.049	0.508	0.708	4.619	2.042	1.319

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	168	182	567	508	212	456	207	255
normalized size	1	1.00	1.08	3.38	3.02	1.26	2.71	1.23	1.52
time (sec)	N/A	0.192	0.672	0.052	0.460	0.780	2.118	3.639	0.970

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	80	219	205	101	219	107	127
normalized size	1	1.00	0.68	1.86	1.74	0.86	1.86	0.91	1.08
time (sec)	N/A	0.104	1.122	0.045	0.453	0.871	0.817	2.194	0.727

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	114	192	335	186	0	7049	-1
normalized size	1	1.00	0.79	1.32	2.31	1.28	0.00	48.61	-0.01
time (sec)	N/A	0.371	0.315	0.051	0.717	0.752	0.000	1.194	0.000

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	206	274	370	284	0	1134	-1
normalized size	1	1.00	1.27	1.69	2.28	1.75	0.00	7.00	-0.01
time (sec)	N/A	0.333	0.630	0.054	0.608	0.702	0.000	0.777	0.000

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	353	347	475	475	0	0	-1
normalized size	1	1.00	1.57	1.54	2.11	2.11	0.00	0.00	-0.00
time (sec)	N/A	0.506	1.020	0.053	1.091	0.865	0.000	0.000	0.000

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	126	484	974	915	0	0	-1
normalized size	1	1.00	0.85	3.27	6.58	6.18	0.00	0.00	-0.01
time (sec)	N/A	0.306	1.187	0.199	0.698	0.886	0.000	0.000	0.000

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	94	254	312	493	0	0	-1
normalized size	1	1.00	0.83	2.25	2.76	4.36	0.00	0.00	-0.01
time (sec)	N/A	0.218	0.738	0.107	0.690	0.869	0.000	0.000	0.000

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	51	122	169	100	272	696	66
normalized size	1	1.00	0.85	2.03	2.82	1.67	4.53	11.60	1.10
time (sec)	N/A	0.064	0.163	0.081	0.335	0.747	1.121	0.618	1.040

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.061	5.355	0.217	0.000	0.669	0.000	0.000	0.000

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.065	5.061	0.418	0.000	0.685	0.000	0.000	0.000

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	309	257	807	3580	1708	0	0	-1
normalized size	1	1.00	0.83	2.61	11.59	5.53	0.00	0.00	-0.00
time (sec)	N/A	0.377	2.132	1.231	6.101	1.067	0.000	0.000	0.000

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	175	421	832	876	0	0	-1
normalized size	1	1.00	0.72	1.73	3.42	3.60	0.00	0.00	-0.00
time (sec)	N/A	0.287	2.452	0.952	1.414	0.918	0.000	0.000	0.000

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	225	233	910	204	1336	3094	183
normalized size	1	1.00	1.52	1.57	6.15	1.38	9.03	20.91	1.24
time (sec)	N/A	0.089	1.186	0.392	1.791	0.692	2.312	41.369	4.810

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.056	15.153	4.727	0.000	0.829	0.000	0.000	0.000

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.052	16.163	7.202	0.000	0.535	0.000	0.000	0.000

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	124	484	982	916	0	0	-1
normalized size	1	1.00	0.84	3.29	6.68	6.23	0.00	0.00	-0.01
time (sec)	N/A	0.295	1.261	0.202	0.695	0.767	0.000	0.000	0.000

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	92	254	316	496	0	0	-1
normalized size	1	1.00	0.82	2.27	2.82	4.43	0.00	0.00	-0.01
time (sec)	N/A	0.212	0.799	0.143	0.507	0.549	0.000	0.000	0.000

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	47	123	169	101	272	697	66
normalized size	1	1.00	0.80	2.08	2.86	1.71	4.61	11.81	1.12
time (sec)	N/A	0.066	0.169	0.116	1.176	0.730	1.119	0.664	0.890

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.075	5.375	0.222	0.000	0.542	0.000	0.000	0.000

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.064	5.078	0.427	0.000	0.747	0.000	0.000	0.000

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F(-2)	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	108	145	0	0	0	116	82
normalized size	1	1.00	0.90	1.21	0.00	0.00	0.00	0.97	0.68
time (sec)	N/A	0.141	0.339	0.139	0.000	0.000	0.000	1.088	0.958

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F(-2)	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	92	119	0	0	0	92	64
normalized size	1	1.00	0.94	1.21	0.00	0.00	0.00	0.94	0.65
time (sec)	N/A	0.103	0.231	0.069	0.000	0.000	0.000	0.603	0.841

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F(-2)	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	76	93	0	0	0	69	47
normalized size	1	1.00	1.31	1.60	0.00	0.00	0.00	1.19	0.81
time (sec)	N/A	0.068	0.198	0.062	0.000	0.000	0.000	0.832	0.234

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	83	0	0	0	0	383	-1
normalized size	1	1.00	0.82	0.00	0.00	0.00	0.00	3.79	-0.01
time (sec)	N/A	0.139	0.180	0.332	0.000	0.000	0.000	2.250	0.000

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	117	0	0	0	0	1140	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	0.00	8.77	-0.01
time (sec)	N/A	0.153	0.351	0.068	0.000	0.000	0.000	2.620	0.000

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	153	0	0	0	0	1487	-1
normalized size	1	1.00	0.88	0.00	0.00	0.00	0.00	8.55	-0.01
time (sec)	N/A	0.193	0.362	0.065	0.000	0.000	0.000	2.082	0.000

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	337	337	231	0	0	0	0	0	-1
normalized size	1	1.00	0.69	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.230	1.333	0.080	0.000	0.000	0.000	0.000	0.000

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	271	271	191	0	0	0	0	0	-1
normalized size	1	1.00	0.70	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.179	0.981	0.046	0.000	0.000	0.000	0.000	0.000

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	113	0	0	0	0	0	-1
normalized size	1	1.00	0.68	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.091	0.708	0.045	0.000	0.000	0.000	0.000	0.000

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	221	221	127	0	0	0	0	0	-1
normalized size	1	1.00	0.57	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.276	0.731	0.046	0.000	0.000	0.000	0.000	0.000

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	263	263	226	0	0	0	0	0	-1
normalized size	1	1.00	0.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.300	0.989	0.046	0.000	0.000	0.000	0.000	0.000

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F(-2)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	295	0	0	0	0	0	-1
normalized size	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.376	0.911	0.047	0.000	0.000	0.000	0.000	0.000

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	417	417	306	0	0	0	0	0	-1
normalized size	1	1.00	0.73	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.249	0.880	0.238	0.000	0.916	0.000	0.000	0.000

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	293	245	0	0	0	0	0	-1
normalized size	1	1.00	0.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.183	0.621	0.084	0.000	0.749	0.000	0.000	0.000

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	231	0	0	0	0	0	-1
normalized size	1	1.00	1.32	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.092	1.629	0.077	0.000	0.710	0.000	0.000	0.000

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.074	3.250	0.064	0.000	0.746	0.000	0.000	0.000

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.074	0.802	0.065	0.000	0.687	0.000	0.000	0.000

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	691	691	455	0	0	0	0	0	-1
normalized size	1	1.00	0.66	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.354	2.934	0.055	0.000	0.723	0.000	0.000	0.000

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	435	435	352	0	0	0	0	0	-1
normalized size	1	1.00	0.81	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.235	2.124	0.053	0.000	0.780	0.000	0.000	0.000

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	249	249	308	0	0	0	0	0	-1
normalized size	1	1.00	1.24	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.128	2.720	0.052	0.000	0.663	0.000	0.000	0.000

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.083	35.566	0.054	0.000	0.699	0.000	0.000	0.000

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.080	18.856	0.053	0.000	0.832	0.000	0.000	0.000

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.069	3.217	0.110	0.000	0.000	0.000	0.000	0.000

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.048	1.280	0.381	0.000	0.659	0.000	0.000	0.000

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	376	0	0	378	0	0	-1
normalized size	1	1.00	0.84	0.00	0.00	0.84	0.00	0.00	-0.00
time (sec)	N/A	0.605	0.902	0.426	0.000	0.795	0.000	0.000	0.000

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	299	260	0	0	266	0	0	-1
normalized size	1	1.00	0.87	0.00	0.00	0.89	0.00	0.00	-0.00
time (sec)	N/A	0.369	0.305	0.359	0.000	0.827	0.000	0.000	0.000

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	199	0	0	136	0	0	-1
normalized size	1	1.00	1.34	0.00	0.00	0.92	0.00	0.00	-0.01
time (sec)	N/A	0.144	2.932	0.133	0.000	0.675	0.000	0.000	0.000

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.055	0.916	0.134	0.000	0.545	0.000	0.000	0.000

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.053	11.222	0.302	0.000	0.733	0.000	0.000	0.000

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	124	482	462	168	264	157	191
normalized size	1	1.00	1.38	5.36	5.13	1.87	2.93	1.74	2.12
time (sec)	N/A	0.123	0.509	0.029	0.430	0.723	1.862	0.393	0.804

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	84	241	239	102	151	95	112
normalized size	1	1.00	1.24	3.54	3.51	1.50	2.22	1.40	1.65
time (sec)	N/A	0.086	0.356	0.019	0.347	0.685	0.814	0.358	0.670

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	43	90	93	51	68	47	50
normalized size	1	1.00	0.96	2.00	2.07	1.13	1.51	1.04	1.11
time (sec)	N/A	0.042	0.128	0.018	0.348	0.690	0.315	0.743	0.634

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	57	96	171	93	0	712	-1
normalized size	1	1.00	0.89	1.50	2.67	1.45	0.00	11.12	-0.02
time (sec)	N/A	0.124	0.161	0.022	0.598	0.857	0.000	0.419	0.000

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	72	141	196	135	0	578	-1
normalized size	1	1.00	0.82	1.60	2.23	1.53	0.00	6.57	-0.01
time (sec)	N/A	0.155	0.379	0.025	0.495	0.749	0.000	2.526	0.000

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	94	177	265	228	0	6157	-1
normalized size	1	1.00	0.76	1.44	2.15	1.85	0.00	50.06	-0.01
time (sec)	N/A	0.190	0.882	0.024	0.950	0.754	0.000	1.419	0.000

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	232	1125	959	382	779	371	497
normalized size	1	1.00	0.93	4.50	3.84	1.53	3.12	1.48	1.99
time (sec)	N/A	0.267	1.413	0.045	0.467	0.576	4.963	0.341	2.643

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	249	561	502	226	456	229	281
normalized size	1	1.00	1.37	3.08	2.76	1.24	2.51	1.26	1.54
time (sec)	N/A	0.192	0.903	0.044	0.442	0.631	2.225	0.338	1.152

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	96	216	202	109	219	119	143
normalized size	1	1.00	0.83	1.86	1.74	0.94	1.89	1.03	1.23
time (sec)	N/A	0.098	0.728	0.043	0.557	0.614	0.862	0.975	0.743

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	134	213	334	189	0	7397	-1
normalized size	1	1.00	0.86	1.37	2.14	1.21	0.00	47.42	-0.01
time (sec)	N/A	0.324	0.344	0.041	0.719	0.657	0.000	1.718	0.000

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	232	301	369	281	0	1135	-1
normalized size	1	1.00	1.27	1.64	2.02	1.54	0.00	6.20	-0.01
time (sec)	N/A	0.334	0.646	0.046	0.595	0.706	0.000	1.130	0.000

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	395	374	474	467	0	0	-1
normalized size	1	1.00	1.61	1.53	1.93	1.91	0.00	0.00	-0.00
time (sec)	N/A	0.424	1.303	0.045	0.722	0.839	0.000	0.000	0.000

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	495	495	401	0	0	2197	0	0	-1
normalized size	1	1.00	0.81	0.00	0.00	4.44	0.00	0.00	-0.00
time (sec)	N/A	0.969	0.255	0.760	0.000	1.094	0.000	0.000	0.000

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	367	367	296	0	0	1553	0	0	-1
normalized size	1	1.00	0.81	0.00	0.00	4.23	0.00	0.00	-0.00
time (sec)	N/A	0.822	0.207	0.477	0.000	0.610	0.000	0.000	0.000

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	182	501	0	1009	0	0	-1
normalized size	1	1.00	0.78	2.14	0.00	4.31	0.00	0.00	-0.00
time (sec)	N/A	0.453	0.043	0.129	0.000	0.642	0.000	0.000	0.000

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.064	0.429	0.097	0.000	0.443	0.000	0.000	0.000

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.061	0.368	0.105	0.000	0.472	0.000	0.000	0.000

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	925	925	742	0	0	5136	0	0	-1
normalized size	1	1.00	0.80	0.00	0.00	5.55	0.00	0.00	-0.00
time (sec)	N/A	1.655	3.511	3.186	0.000	0.989	0.000	0.000	0.000

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	671	671	530	0	0	3113	0	0	-1
normalized size	1	1.00	0.79	0.00	0.00	4.64	0.00	0.00	-0.00
time (sec)	N/A	1.205	1.771	2.327	0.000	0.762	0.000	0.000	0.000

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	305	305	236	650	0	1520	0	0	-1
normalized size	1	1.00	0.77	2.13	0.00	4.98	0.00	0.00	-0.00
time (sec)	N/A	0.550	1.083	1.237	0.000	0.719	0.000	0.000	0.000

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.059	37.820	4.382	0.000	0.452	0.000	0.000	0.000

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.057	109.507	8.140	0.000	0.471	0.000	0.000	0.000

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.051	1.081	0.395	0.000	0.455	0.000	0.000	0.000

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	607	607	415	0	0	428	0	0	-1
normalized size	1	1.00	0.68	0.00	0.00	0.71	0.00	0.00	-0.00
time (sec)	N/A	0.764	6.182	0.437	0.000	0.500	0.000	0.000	0.000

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	318	318	268	0	0	274	0	0	-1
normalized size	1	1.00	0.84	0.00	0.00	0.86	0.00	0.00	-0.00
time (sec)	N/A	0.392	4.151	0.385	0.000	0.490	0.000	0.000	0.000

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	138	0	0	136	0	0	-1
normalized size	1	1.00	0.93	0.00	0.00	0.92	0.00	0.00	-0.01
time (sec)	N/A	0.149	0.206	0.100	0.000	0.482	0.000	0.000	0.000

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.057	0.407	0.116	0.000	0.443	0.000	0.000	0.000

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.055	4.130	0.365	0.000	0.435	0.000	0.000	0.000

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	261	526	1307	1042	0	0	-1
normalized size	1	1.00	1.59	3.21	7.97	6.35	0.00	0.00	-0.01
time (sec)	N/A	0.340	2.035	0.266	0.629	0.506	0.000	0.000	0.000

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	213	282	404	581	0	0	-1
normalized size	1	1.00	1.65	2.19	3.13	4.50	0.00	0.00	-0.01
time (sec)	N/A	0.257	1.391	0.180	0.560	0.514	0.000	0.000	0.000

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	199	446	273	151	456	772	80
normalized size	1	1.00	2.62	5.87	3.59	1.99	6.00	10.16	1.05
time (sec)	N/A	0.095	0.566	0.141	0.421	0.444	2.003	1.709	1.159

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	72	41	50	54	80	32	27
normalized size	1	1.00	2.57	1.46	1.79	1.93	2.86	1.14	0.96
time (sec)	N/A	0.038	0.115	0.065	0.409	0.446	1.608	0.853	0.736

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.048	9.278	0.276	0.000	0.437	0.000	0.000	0.000

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.047	8.947	0.355	0.000	0.434	0.000	0.000	0.000

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	247	247	1314	748	4598	1313	0	0	-1
normalized size	1	1.00	5.32	3.03	18.62	5.32	0.00	0.00	-0.00
time (sec)	N/A	0.472	3.246	0.437	1.972	0.573	0.000	0.000	0.000

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	295	408	603	716	0	0	-1
normalized size	1	1.00	1.57	2.17	3.21	3.81	0.00	0.00	-0.01
time (sec)	N/A	0.348	2.764	0.562	1.628	0.524	0.000	0.000	0.000

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	236	216	1762	196	1867	0	164
normalized size	1	1.00	2.13	1.95	15.87	1.77	16.82	0.00	1.48
time (sec)	N/A	0.160	0.828	0.243	1.115	0.476	3.943	0.000	1.768

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	85	64	129	69	422	77	69
normalized size	1	1.00	1.89	1.42	2.87	1.53	9.38	1.71	1.53
time (sec)	N/A	0.082	0.160	0.061	0.937	0.468	3.049	0.631	1.185

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.072	9.623	0.579	0.000	0.455	0.000	0.000	0.000

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.069	10.440	0.893	0.000	0.439	0.000	0.000	0.000

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	382	382	538	870	0	1563	0	0	-1
normalized size	1	1.00	1.41	2.28	0.00	4.09	0.00	0.00	-0.00
time (sec)	N/A	0.621	2.952	0.287	0.000	0.563	0.000	0.000	0.000

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	830	481	0	844	0	0	-1
normalized size	1	1.00	2.99	1.73	0.00	3.04	0.00	0.00	-0.00
time (sec)	N/A	0.493	3.107	0.711	0.000	0.573	0.000	0.000	0.000

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	298	662	0	250	4653	0	246
normalized size	1	1.00	1.89	4.19	0.00	1.58	29.45	0.00	1.56
time (sec)	N/A	0.220	1.543	0.289	0.000	0.503	8.317	0.000	1.940

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	117	163	212	92	1127	91	92
normalized size	1	1.00	1.56	2.17	2.83	1.23	15.03	1.21	1.23
time (sec)	N/A	0.062	0.203	0.064	0.667	0.471	6.519	0.398	3.286

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.069	6.754	1.049	0.000	0.442	0.000	0.000	0.000

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.069	6.192	1.490	0.000	0.430	0.000	0.000	0.000

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	352	352	443	1151	2778	2914	0	0	-1
normalized size	1	1.00	1.26	3.27	7.89	8.28	0.00	0.00	-0.00
time (sec)	N/A	0.469	2.825	0.410	2.483	0.659	0.000	0.000	0.000

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	249	249	330	643	1410	1636	0	0	-1
normalized size	1	1.00	1.33	2.58	5.66	6.57	0.00	0.00	-0.00
time (sec)	N/A	0.330	2.203	0.236	1.386	0.583	0.000	0.000	0.000

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	300	245	517	609	0	0	-1
normalized size	1	1.00	2.24	1.83	3.86	4.54	0.00	0.00	-0.01
time (sec)	N/A	0.157	1.100	0.243	0.910	0.542	0.000	0.000	0.000

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	48	40	51	97	0	38	39
normalized size	1	1.00	1.26	1.05	1.34	2.55	0.00	1.00	1.03
time (sec)	N/A	0.054	0.070	0.086	0.626	0.449	0.000	1.474	1.214

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.060	11.967	5.110	0.000	0.453	0.000	0.000	0.000

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.055	13.541	10.398	0.000	0.466	0.000	0.000	0.000

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	463	463	1013	1705	7587	4789	0	0	-1
normalized size	1	1.00	2.19	3.68	16.39	10.34	0.00	0.00	-0.00
time (sec)	N/A	0.776	11.222	0.446	9.053	0.714	0.000	0.000	0.000

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	327	327	693	942	3706	2533	0	0	-1
normalized size	1	1.00	2.12	2.88	11.33	7.75	0.00	0.00	-0.00
time (sec)	N/A	0.509	8.535	0.285	3.431	0.603	0.000	0.000	0.000

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	396	351	1279	858	0	0	-1
normalized size	1	1.00	2.34	2.08	7.57	5.08	0.00	0.00	-0.01
time (sec)	N/A	0.189	1.804	0.303	0.902	0.530	0.000	0.000	0.000

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	57	77	112	156	0	88	83
normalized size	1	1.00	1.12	1.51	2.20	3.06	0.00	1.73	1.63
time (sec)	N/A	0.077	0.200	0.095	0.362	0.456	0.000	0.380	1.268

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.069	25.273	4.754	0.000	0.450	0.000	0.000	0.000

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.068	49.356	7.478	0.000	0.471	0.000	0.000	0.000

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-1)	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	600	600	1485	2257	0	7842	0	0	-1
normalized size	1	1.00	2.48	3.76	0.00	13.07	0.00	0.00	-0.00
time (sec)	N/A	1.108	33.963	0.445	0.000	0.918	0.000	0.000	0.000

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	392	392	951	1215	6123	4026	0	0	-1
normalized size	1	1.00	2.43	3.10	15.62	10.27	0.00	0.00	-0.00
time (sec)	N/A	0.722	19.507	0.375	7.595	0.697	0.000	0.000	0.000

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	484	468	2087	1355	0	0	-1
normalized size	1	1.00	2.24	2.17	9.66	6.27	0.00	0.00	-0.00
time (sec)	N/A	0.283	3.813	0.392	2.511	0.580	0.000	0.000	0.000

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	85	115	157	232	0	112	116
normalized size	1	1.00	1.04	1.40	1.91	2.83	0.00	1.37	1.41
time (sec)	N/A	0.090	0.549	0.114	0.568	0.492	0.000	0.664	1.387

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.067	83.938	10.852	0.000	0.515	0.000	0.000	0.000

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.066	176.781	12.504	0.000	0.564	0.000	0.000	0.000

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.062	8.754	0.512	0.000	0.449	0.000	0.000	0.000

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.039	1.859	0.198	0.000	0.452	0.000	0.000	0.000

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.051	0.790	0.134	0.000	0.471	0.000	0.000	0.000

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.041	37.191	0.143	0.000	0.438	0.000	0.000	0.000

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.065	34.765	0.172	0.000	0.435	0.000	0.000	0.000

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	544	544	956	0	0	2342	0	0	-1
normalized size	1	1.00	1.76	0.00	0.00	4.31	0.00	0.00	-0.00
time (sec)	N/A	0.968	3.618	1.409	0.000	0.674	0.000	0.000	0.000

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	408	408	445	0	0	1660	0	0	-1
normalized size	1	1.00	1.09	0.00	0.00	4.07	0.00	0.00	-0.00
time (sec)	N/A	0.859	2.286	1.102	0.000	0.703	0.000	0.000	0.000

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	299	548	0	1065	0	0	-1
normalized size	1	1.00	1.12	2.05	0.00	3.99	0.00	0.00	-0.00
time (sec)	N/A	0.585	1.717	0.197	0.000	0.717	0.000	0.000	0.000

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	59	70	0	237	335	77	139
normalized size	1	1.00	1.04	1.23	0.00	4.16	5.88	1.35	2.44
time (sec)	N/A	0.068	0.122	0.006	0.000	0.532	61.341	0.316	1.996

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	643	643	1020	0	0	2691	0	0	-1
normalized size	1	1.00	1.59	0.00	0.00	4.19	0.00	0.00	-0.00
time (sec)	N/A	1.176	7.619	1.529	0.000	0.788	0.000	0.000	0.000

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	479	479	531	0	0	1865	0	0	-1
normalized size	1	1.00	1.11	0.00	0.00	3.89	0.00	0.00	-0.00
time (sec)	N/A	1.038	3.351	1.555	0.000	0.669	0.000	0.000	0.000

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	311	311	709	625	0	1167	0	0	-1
normalized size	1	1.00	2.28	2.01	0.00	3.75	0.00	0.00	-0.00
time (sec)	N/A	0.551	7.390	0.521	0.000	0.675	0.000	0.000	0.000

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	71	96	0	283	0	99	127
normalized size	1	1.00	0.95	1.28	0.00	3.77	0.00	1.32	1.69
time (sec)	N/A	0.106	0.184	0.062	0.000	0.474	0.000	0.734	2.499

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	802	802	1923	0	0	3028	0	0	-1
normalized size	1	1.00	2.40	0.00	0.00	3.78	0.00	0.00	-0.00
time (sec)	N/A	1.341	5.645	0.335	0.000	0.895	0.000	0.000	0.000

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	592	592	1166	0	0	2064	0	0	-1
normalized size	1	1.00	1.97	0.00	0.00	3.49	0.00	0.00	-0.00
time (sec)	N/A	1.180	4.047	0.648	0.000	0.732	0.000	0.000	0.000

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	382	382	752	686	0	1255	0	0	-1
normalized size	1	1.00	1.97	1.80	0.00	3.29	0.00	0.00	-0.00
time (sec)	N/A	0.666	8.741	0.754	0.000	0.696	0.000	0.000	0.000

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	97	216	0	359	0	151	199
normalized size	1	1.00	0.91	2.02	0.00	3.36	0.00	1.41	1.86
time (sec)	N/A	0.186	0.275	0.063	0.000	0.587	0.000	0.322	3.011

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	732	732	894	0	0	3608	0	0	-1
normalized size	1	1.00	1.22	0.00	0.00	4.93	0.00	0.00	-0.00
time (sec)	N/A	1.117	2.638	1.583	0.000	0.767	0.000	0.000	0.000

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	528	528	573	0	0	2432	0	0	-1
normalized size	1	1.00	1.09	0.00	0.00	4.61	0.00	0.00	-0.00
time (sec)	N/A	0.946	1.578	0.992	0.000	0.684	0.000	0.000	0.000

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	325	325	764	660	0	1444	0	0	-1
normalized size	1	1.00	2.35	2.03	0.00	4.44	0.00	0.00	-0.00
time (sec)	N/A	0.615	6.374	0.253	0.000	0.773	0.000	0.000	0.000

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	77	69	0	297	0	83	173
normalized size	1	1.00	1.15	1.03	0.00	4.43	0.00	1.24	2.58
time (sec)	N/A	0.083	0.073	0.003	0.000	0.608	0.000	0.696	2.677

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	882	882	1680	0	0	4584	0	0	-1
normalized size	1	1.00	1.90	0.00	0.00	5.20	0.00	0.00	-0.00
time (sec)	N/A	1.551	48.206	4.656	0.000	1.007	0.000	0.000	0.000

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	639	639	911	0	0	2988	0	0	-1
normalized size	1	1.00	1.43	0.00	0.00	4.68	0.00	0.00	-0.00
time (sec)	N/A	1.206	12.193	3.593	0.000	0.820	0.000	0.000	0.000

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	370	370	933	766	0	1700	0	0	-1
normalized size	1	1.00	2.52	2.07	0.00	4.59	0.00	0.00	-0.00
time (sec)	N/A	0.616	11.372	0.292	0.000	0.757	0.000	0.000	0.000

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	111	109	0	400	0	130	222
normalized size	1	1.00	1.34	1.31	0.00	4.82	0.00	1.57	2.67
time (sec)	N/A	0.128	0.460	0.003	0.000	0.530	0.000	2.407	2.960

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.068	8.240	0.452	0.000	0.451	0.000	0.000	0.000

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.042	0.834	0.187	0.000	0.438	0.000	0.000	0.000

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.054	0.314	0.083	0.000	0.439	0.000	0.000	0.000

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.042	23.730	0.120	0.000	0.464	0.000	0.000	0.000

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.068	42.859	0.158	0.000	0.467	0.000	0.000	0.000

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F(-2)	B	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	574	574	2141	750	0	1514	0	0	-1
normalized size	1	1.00	3.73	1.31	0.00	2.64	0.00	0.00	-0.00
time (sec)	N/A	1.617	15.652	1.451	0.000	0.701	0.000	0.000	0.000

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1106	1106	3759	0	0	3136	0	0	-1
normalized size	1	1.00	3.40	0.00	0.00	2.84	0.00	0.00	-0.00
time (sec)	N/A	2.557	25.426	2.784	0.000	0.781	0.000	0.000	0.000

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1512	1512	5446	0	0	5200	0	0	-1
normalized size	1	1.00	3.60	0.00	0.00	3.44	0.00	0.00	-0.00
time (sec)	N/A	3.066	22.319	3.010	0.000	1.000	0.000	0.000	0.000

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	F(-2)	B	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	751	751	2408	1084	0	2429	0	0	-1
normalized size	1	1.00	3.21	1.44	0.00	3.23	0.00	0.00	-0.00
time (sec)	N/A	2.955	16.005	2.645	0.000	0.825	0.000	0.000	0.000

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1584	1584	13567	0	0	5761	0	0	-1
normalized size	1	1.00	8.57	0.00	0.00	3.64	0.00	0.00	-0.00
time (sec)	N/A	5.943	26.001	5.178	0.000	1.115	0.000	0.000	0.000

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	2348	2348	11208	0	0	10622	0	0	-1
normalized size	1	1.00	4.77	0.00	0.00	4.52	0.00	0.00	-0.00
time (sec)	N/A	8.374	22.600	3.663	0.000	1.768	0.000	0.000	0.000

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	276	679	510	490	0	0	-1
normalized size	1	1.00	1.83	4.50	3.38	3.25	0.00	0.00	-0.01
time (sec)	N/A	0.234	1.495	0.273	1.234	0.496	0.000	0.000	0.000

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	221	421	293	302	0	0	-1
normalized size	1	1.00	1.94	3.69	2.57	2.65	0.00	0.00	-0.01
time (sec)	N/A	0.211	1.052	0.216	0.873	0.461	0.000	0.000	0.000

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	246	203	116	156	0	0	-1
normalized size	1	1.00	3.11	2.57	1.47	1.97	0.00	0.00	-0.01
time (sec)	N/A	0.125	0.574	0.229	0.946	0.456	0.000	0.000	0.000

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	19	18	16	24	19	16
normalized size	1	1.00	1.00	1.19	1.12	1.00	1.50	1.19	1.00
time (sec)	N/A	0.025	0.011	0.049	0.297	0.440	0.494	1.869	0.054

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.047	3.251	0.263	0.000	0.424	0.000	0.000	0.000

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.047	4.444	0.301	0.000	0.442	0.000	0.000	0.000

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	102	436	534	157	984	0	184
normalized size	1	1.00	1.03	4.40	5.39	1.59	9.94	0.00	1.86
time (sec)	N/A	0.144	0.764	0.125	0.731	0.462	10.037	0.000	3.020

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	74	215	309	96	605	0	110
normalized size	1	1.00	0.99	2.87	4.12	1.28	8.07	0.00	1.47
time (sec)	N/A	0.115	0.468	0.122	0.726	0.441	6.550	0.000	2.964

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	53	78	151	49	326	0	53
normalized size	1	1.00	1.04	1.53	2.96	0.96	6.39	0.00	1.04
time (sec)	N/A	0.064	0.538	0.116	0.946	0.449	4.155	0.000	2.936

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	97	43	52	17	88	34	29
normalized size	1	1.00	5.11	2.26	2.74	0.89	4.63	1.79	1.53
time (sec)	N/A	0.042	0.149	0.105	0.738	0.426	2.765	0.672	2.774

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	58	102	163	89	0	716	-1
normalized size	1	1.00	0.81	1.42	2.26	1.24	0.00	9.94	-0.01
time (sec)	N/A	0.201	0.312	0.112	0.408	0.461	0.000	1.305	0.000

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	80	132	172	129	0	3408	-1
normalized size	1	1.00	0.84	1.39	1.81	1.36	0.00	35.87	-0.01
time (sec)	N/A	0.200	0.442	0.113	1.043	0.449	0.000	6.453	0.000

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	132	737	572	270	2725	0	339
normalized size	1	1.00	0.60	3.37	2.61	1.23	12.44	0.00	1.55
time (sec)	N/A	0.243	1.365	0.124	0.787	0.442	18.777	0.000	3.494

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	161	161	95	339	289	149	1528	0	187
normalized size	1	1.00	0.59	2.11	1.80	0.93	9.49	0.00	1.16
time (sec)	N/A	0.173	1.088	0.113	0.917	0.443	12.349	0.000	3.203

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	52	114	114	67	724	0	84
normalized size	1	1.00	0.57	1.25	1.25	0.74	7.96	0.00	0.92
time (sec)	N/A	0.091	0.950	0.109	0.659	0.434	7.986	0.000	3.038

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	24	28	25	25	158	25	22
normalized size	1	1.00	0.75	0.88	0.78	0.78	4.94	0.78	0.69
time (sec)	N/A	0.046	0.044	0.051	0.432	0.418	5.375	1.031	2.642

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F(-1)	C	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	105	161	280	157	0	4828	-1
normalized size	1	1.00	0.82	1.26	2.19	1.23	0.00	37.72	-0.01
time (sec)	N/A	0.296	0.399	0.106	0.820	0.438	0.000	4.171	0.000

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	C	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	203	230	307	242	0	0	-1
normalized size	1	1.00	1.16	1.31	1.75	1.38	0.00	0.00	-0.01
time (sec)	N/A	0.334	0.625	0.109	0.506	0.467	0.000	0.000	0.000

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	C	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	502	502	865	1265	3825	1884	0	0	-1
normalized size	1	1.00	1.72	2.52	7.62	3.75	0.00	0.00	-0.00
time (sec)	N/A	0.488	8.975	0.422	1.796	0.677	0.000	0.000	0.000

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	670	677	1923	1064	0	0	-1
normalized size	1	1.00	2.41	2.44	6.92	3.83	0.00	0.00	-0.00
time (sec)	N/A	0.267	8.207	0.310	0.836	0.584	0.000	0.000	0.000

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	655	303	730	508	0	0	-1
normalized size	1	1.00	3.81	1.76	4.24	2.95	0.00	0.00	-0.01
time (sec)	N/A	0.139	3.073	0.337	1.393	0.542	0.000	0.000	0.000

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	30	54	47	58	0	58	33
normalized size	1	1.00	0.81	1.46	1.27	1.57	0.00	1.57	0.89
time (sec)	N/A	0.051	0.039	0.108	0.487	0.483	0.000	3.943	0.084

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.045	14.289	2.256	0.000	0.454	0.000	0.000	0.000

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.046	23.274	4.023	0.000	0.486	0.000	0.000	0.000

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	475	475	1117	1124	5107	1527	0	0	-1
normalized size	1	1.00	2.35	2.37	10.75	3.21	0.00	0.00	-0.00
time (sec)	N/A	0.594	8.926	0.518	2.183	0.627	0.000	0.000	0.000

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	343	343	637	573	1332	855	0	0	-1
normalized size	1	1.00	1.86	1.67	3.88	2.49	0.00	0.00	-0.00
time (sec)	N/A	0.378	7.044	0.385	0.869	0.558	0.000	0.000	0.000

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	231	466	1115	156	0	6656	240
normalized size	1	1.00	1.52	3.07	7.34	1.03	0.00	43.79	1.58
time (sec)	N/A	0.145	1.110	0.308	0.388	0.469	0.000	8.778	7.667

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	45	70	129	49	0	67	71
normalized size	1	1.00	1.07	1.67	3.07	1.17	0.00	1.60	1.69
time (sec)	N/A	0.051	0.057	0.125	0.325	0.424	0.000	0.268	2.802

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.066	20.563	3.898	0.000	0.478	0.000	0.000	0.000

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.067	26.656	6.602	0.000	0.503	0.000	0.000	0.000

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	698	698	1901	2161	10800	2566	0	0	-1
normalized size	1	1.00	2.72	3.10	15.47	3.68	0.00	0.00	-0.00
time (sec)	N/A	0.735	10.363	0.649	79.655	0.823	0.000	0.000	0.000

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	C	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	431	431	1468	1119	5262	1513	0	0	-1
normalized size	1	1.00	3.41	2.60	12.21	3.51	0.00	0.00	-0.00
time (sec)	N/A	0.398	9.018	0.622	17.697	0.645	0.000	0.000	0.000

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	1171	483	1974	792	0	0	-1
normalized size	1	1.00	4.86	2.00	8.19	3.29	0.00	0.00	-0.00
time (sec)	N/A	0.191	6.584	0.663	2.945	0.595	0.000	0.000	0.000

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	75	90	91	125	0	96	74
normalized size	1	1.00	0.97	1.17	1.18	1.62	0.00	1.25	0.96
time (sec)	N/A	0.080	0.111	0.136	0.742	0.449	0.000	1.992	0.096

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.072	36.085	6.454	0.000	0.545	0.000	0.000	0.000

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	F(-1)	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.072	54.478	2.458	0.000	0.591	0.000	0.000	0.000

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	405	0	0	334	0	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.74	0.00	0.00	-0.00
time (sec)	N/A	0.643	4.792	0.328	0.000	0.499	0.000	0.000	0.000

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	253	0	0	187	0	0	-1
normalized size	1	1.00	0.91	0.00	0.00	0.68	0.00	0.00	-0.00
time (sec)	N/A	0.319	2.555	0.341	0.000	0.463	0.000	0.000	0.000

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	220	0	0	130	0	0	-1
normalized size	1	1.00	1.43	0.00	0.00	0.84	0.00	0.00	-0.01
time (sec)	N/A	0.177	0.979	0.197	0.000	0.487	0.000	0.000	0.000

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.044	8.305	0.142	0.000	0.478	0.000	0.000	0.000

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.064	0.348	0.002	0.000	0.447	0.000	0.000	0.000

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.044	164.926	0.201	0.000	0.445	0.000	0.000	0.000

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.074	27.329	0.263	0.000	0.449	0.000	0.000	0.000

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	432	432	410	0	0	1793	0	0	-1
normalized size	1	1.00	0.95	0.00	0.00	4.15	0.00	0.00	-0.00
time (sec)	N/A	0.608	0.191	2.120	0.000	0.637	0.000	0.000	0.000

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	320	320	302	0	0	1245	0	0	-1
normalized size	1	1.00	0.94	0.00	0.00	3.89	0.00	0.00	-0.00
time (sec)	N/A	0.513	0.164	1.549	0.000	0.577	0.000	0.000	0.000

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	197	1006	0	781	0	0	-1
normalized size	1	1.00	0.93	4.75	0.00	3.68	0.00	0.00	-0.00
time (sec)	N/A	0.285	0.050	0.235	0.000	0.629	0.000	0.000	0.000

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	19	18	18	41	19	18
normalized size	1	1.00	1.00	1.06	1.00	1.00	2.28	1.06	1.00
time (sec)	N/A	0.026	0.008	0.003	0.775	0.476	0.624	0.314	0.058

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	618	618	1025	0	0	2351	0	0	-1
normalized size	1	1.00	1.66	0.00	0.00	3.80	0.00	0.00	-0.00
time (sec)	N/A	1.068	3.510	2.027	0.000	0.738	0.000	0.000	0.000

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	460	460	536	0	0	1646	0	0	-1
normalized size	1	1.00	1.17	0.00	0.00	3.58	0.00	0.00	-0.00
time (sec)	N/A	0.929	2.640	1.623	0.000	0.656	0.000	0.000	0.000

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	716	1123	0	1047	0	0	-1
normalized size	1	1.00	2.40	3.77	0.00	3.51	0.00	0.00	-0.00
time (sec)	N/A	0.535	7.170	0.529	0.000	0.683	0.000	0.000	0.000

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	361	142	0	214	0	95	318
normalized size	1	1.00	5.16	2.03	0.00	3.06	0.00	1.36	4.54
time (sec)	N/A	0.116	1.402	0.003	0.000	0.495	0.000	0.322	3.917

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	737	737	2452	0	0	2704	0	0	-1
normalized size	1	1.00	3.33	0.00	0.00	3.67	0.00	0.00	-0.00
time (sec)	N/A	0.881	10.706	2.839	0.000	0.821	0.000	0.000	0.000

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	548	548	2397	0	0	1793	0	0	-1
normalized size	1	1.00	4.37	0.00	0.00	3.27	0.00	0.00	-0.00
time (sec)	N/A	0.733	5.970	2.675	0.000	0.651	0.000	0.000	0.000

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	2165	1750	0	1045	0	0	-1
normalized size	1	1.00	6.17	4.99	0.00	2.98	0.00	0.00	-0.00
time (sec)	N/A	0.409	14.665	1.182	0.000	0.723	0.000	0.000	0.000

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	54	72	55	53	0	56	55
normalized size	1	1.00	0.89	1.18	0.90	0.87	0.00	0.92	0.90
time (sec)	N/A	0.068	0.076	0.004	0.415	0.453	0.000	0.726	0.090

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	937	937	2496	0	0	3081	0	0	-1
normalized size	1	1.00	2.66	0.00	0.00	3.29	0.00	0.00	-0.00
time (sec)	N/A	1.618	10.034	1.664	0.000	0.746	0.000	0.000	0.000

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	667	667	1561	0	0	2041	0	0	-1
normalized size	1	1.00	2.34	0.00	0.00	3.06	0.00	0.00	-0.00
time (sec)	N/A	1.143	5.860	1.125	0.000	0.666	0.000	0.000	0.000

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	413	413	2743	861	0	1189	0	0	-1
normalized size	1	1.00	6.64	2.08	0.00	2.88	0.00	0.00	-0.00
time (sec)	N/A	0.635	16.829	0.363	0.000	0.673	0.000	0.000	0.000

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	64	76	64	62	0	71	69
normalized size	1	1.00	0.85	1.01	0.85	0.83	0.00	0.95	0.92
time (sec)	N/A	0.081	0.065	0.003	1.318	0.464	0.000	2.091	0.198

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	923	923	1438	0	0	4140	0	0	-1
normalized size	1	1.00	1.56	0.00	0.00	4.49	0.00	0.00	-0.00
time (sec)	N/A	1.937	9.338	6.699	0.000	1.047	0.000	0.000	0.000

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	659	659	1122	0	0	2677	0	0	-1
normalized size	1	1.00	1.70	0.00	0.00	4.06	0.00	0.00	-0.00
time (sec)	N/A	1.434	7.929	5.488	0.000	0.806	0.000	0.000	0.000

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	349	349	842	1542	0	1279	0	0	-1
normalized size	1	1.00	2.41	4.42	0.00	3.66	0.00	0.00	-0.00
time (sec)	N/A	0.795	9.622	0.516	0.000	0.729	0.000	0.000	0.000

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	152	117	0	305	0	107	149
normalized size	1	1.00	1.81	1.39	0.00	3.63	0.00	1.27	1.77
time (sec)	N/A	0.101	0.259	0.005	0.000	0.470	0.000	1.979	4.228

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.071	6.136	0.371	0.000	0.440	0.000	0.000	0.000

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.046	3.458	0.222	0.000	0.431	0.000	0.000	0.000

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.058	0.108	0.000	0.000	0.457	0.000	0.000	0.000

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	29	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.044	148.602	0.133	0.000	0.452	0.000	0.000	0.000

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	31	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.067	21.739	0.211	0.000	0.445	0.000	0.000	0.000

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	A	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	73	194	0	339	0	0	-1
normalized size	1	1.00	0.95	2.52	0.00	4.40	0.00	0.00	-0.01
time (sec)	N/A	0.072	0.437	1.524	0.000	0.490	0.000	0.000	0.000

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	280	280	311	606	0	1401	0	0	-1
normalized size	1	1.00	1.11	2.16	0.00	5.00	0.00	0.00	-0.00
time (sec)	N/A	0.528	3.214	1.482	0.000	0.732	0.000	0.000	0.000

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	418	418	446	0	0	2294	0	0	-1
normalized size	1	1.00	1.07	0.00	0.00	5.49	0.00	0.00	-0.00
time (sec)	N/A	0.885	2.457	2.610	0.000	0.679	0.000	0.000	0.000

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	B	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	112	349	0	625	0	0	-1
normalized size	1	1.00	0.97	3.01	0.00	5.39	0.00	0.00	-0.01
time (sec)	N/A	0.097	1.165	2.600	0.000	0.496	0.000	0.000	0.000

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	357	357	1104	946	0	2383	0	0	-1
normalized size	1	1.00	3.09	2.65	0.00	6.68	0.00	0.00	-0.00
time (sec)	N/A	0.611	15.344	2.945	0.000	1.802	0.000	0.000	0.000

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F(-1)	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	753	753	2311	0	0	4931	0	0	-1
normalized size	1	1.00	3.07	0.00	0.00	6.55	0.00	0.00	-0.00
time (sec)	N/A	1.274	20.017	2.771	0.000	1.020	0.000	0.000	0.000

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	765	765	1194	0	0	3109	0	0	-1
normalized size	1	1.00	1.56	0.00	0.00	4.06	0.00	0.00	-0.00
time (sec)	N/A	1.426	1.927	4.643	0.000	0.745	0.000	0.000	0.000

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	557	557	607	0	0	2123	0	0	-1
normalized size	1	1.00	1.09	0.00	0.00	3.81	0.00	0.00	-0.00
time (sec)	N/A	1.190	1.671	3.789	0.000	0.704	0.000	0.000	0.000

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	812	1207	0	1288	0	0	-1
normalized size	1	1.00	2.31	3.44	0.00	3.67	0.00	0.00	-0.00
time (sec)	N/A	0.660	6.774	0.510	0.000	0.690	0.000	0.000	0.000

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	90	137	0	262	0	94	896
normalized size	1	1.00	1.20	1.83	0.00	3.49	0.00	1.25	11.95
time (sec)	N/A	0.184	0.126	0.168	0.000	0.539	0.000	3.343	5.394

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	763	763	4014	0	0	3461	0	0	-1
normalized size	1	1.00	5.26	0.00	0.00	4.54	0.00	0.00	-0.00
time (sec)	N/A	1.359	10.753	8.400	0.000	0.939	0.000	0.000	0.000

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	566	566	1834	0	0	2266	0	0	-1
normalized size	1	1.00	3.24	0.00	0.00	4.00	0.00	0.00	-0.00
time (sec)	N/A	1.122	9.554	7.231	0.000	0.734	0.000	0.000	0.000

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	379	379	2209	1694	0	1301	0	0	-1
normalized size	1	1.00	5.83	4.47	0.00	3.43	0.00	0.00	-0.00
time (sec)	N/A	0.631	14.942	2.120	0.000	0.725	0.000	0.000	0.000

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	53	68	54	55	0	56	98
normalized size	1	1.00	0.90	1.15	0.92	0.93	0.00	0.95	1.66
time (sec)	N/A	0.108	0.074	0.180	0.589	0.489	0.000	0.722	4.686

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1138	1138	1181	0	0	4221	0	0	-1
normalized size	1	1.00	1.04	0.00	0.00	3.71	0.00	0.00	-0.00
time (sec)	N/A	2.107	6.734	6.873	0.000	1.181	0.000	0.000	0.000

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	825	825	1254	0	0	2797	0	0	-1
normalized size	1	1.00	1.52	0.00	0.00	3.39	0.00	0.00	-0.00
time (sec)	N/A	1.633	5.078	6.114	0.000	0.866	0.000	0.000	0.000

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	524	524	934	1850	0	1619	0	0	-1
normalized size	1	1.00	1.78	3.53	0.00	3.09	0.00	0.00	-0.00
time (sec)	N/A	0.899	11.764	2.140	0.000	0.804	0.000	0.000	0.000

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	143	334	0	350	0	183	1320
normalized size	1	1.00	1.15	2.69	0.00	2.82	0.00	1.48	10.65
time (sec)	N/A	0.280	0.272	0.197	0.000	0.645	0.000	0.645	6.640

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	852	852	2974	0	0	3923	0	0	-1
normalized size	1	1.00	3.49	0.00	0.00	4.60	0.00	0.00	-0.00
time (sec)	N/A	1.782	49.182	7.300	0.000	0.901	0.000	0.000	0.000

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	616	616	1833	0	0	2543	0	0	-1
normalized size	1	1.00	2.98	0.00	0.00	4.13	0.00	0.00	-0.00
time (sec)	N/A	1.387	14.229	5.241	0.000	0.711	0.000	0.000	0.000

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	F	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	386	386	2314	1732	0	1427	0	0	-1
normalized size	1	1.00	5.99	4.49	0.00	3.70	0.00	0.00	-0.00
time (sec)	N/A	0.784	14.895	0.579	0.000	0.709	0.000	0.000	0.000

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	54	72	57	69	0	72	118
normalized size	1	1.00	0.90	1.20	0.95	1.15	0.00	1.20	1.97
time (sec)	N/A	0.123	0.099	0.149	0.771	0.504	0.000	0.666	4.808

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1144	1144	3860	0	0	4722	0	0	-1
normalized size	1	1.00	3.37	0.00	0.00	4.13	0.00	0.00	-0.00
time (sec)	N/A	2.656	45.915	8.140	0.000	1.238	0.000	0.000	0.000

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	840	840	951	0	0	3085	0	0	-1
normalized size	1	1.00	1.13	0.00	0.00	3.67	0.00	0.00	-0.00
time (sec)	N/A	2.152	10.851	6.583	0.000	0.946	0.000	0.000	0.000

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	517	517	1019	1863	0	1768	0	0	-1
normalized size	1	1.00	1.97	3.60	0.00	3.42	0.00	0.00	-0.00
time (sec)	N/A	1.142	11.886	1.865	0.000	0.779	0.000	0.000	0.000

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	146	249	0	396	0	221	1167
normalized size	1	1.00	1.40	2.39	0.00	3.81	0.00	2.12	11.22
time (sec)	N/A	0.270	0.823	0.173	0.000	0.610	0.000	1.022	6.109

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1432	1432	3944	0	0	4936	0	0	-1
normalized size	1	1.00	2.75	0.00	0.00	3.45	0.00	0.00	-0.00
time (sec)	N/A	2.947	49.227	11.006	0.000	1.368	0.000	0.000	0.000

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F(-2)	C	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1051	1051	5156	0	0	3145	0	0	-1
normalized size	1	1.00	4.91	0.00	0.00	2.99	0.00	0.00	-0.00
time (sec)	N/A	2.241	13.979	10.585	0.000	0.993	0.000	0.000	0.000

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	F(-1)	F(-1)
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	641	641	2504	2449	0	1715	0	0	-1
normalized size	1	1.00	3.91	3.82	0.00	2.68	0.00	0.00	-0.00
time (sec)	N/A	1.225	15.410	4.219	0.000	0.853	0.000	0.000	0.000

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	86	124	91	133	0	105	233
normalized size	1	1.00	0.90	1.29	0.95	1.39	0.00	1.09	2.43
time (sec)	N/A	0.155	0.208	0.173	0.748	0.560	0.000	1.906	5.054

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [249] had the largest ratio of [.6154]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	5	2	1.00	14	0.143
2	A	4	2	1.00	14	0.143
3	A	3	2	1.00	14	0.143
4	A	2	2	1.00	12	0.167
5	A	3	3	1.00	14	0.214
6	A	4	4	1.00	14	0.286
7	A	5	4	1.00	14	0.286
8	A	6	4	1.00	16	0.250
9	A	4	3	1.00	16	0.188
10	A	4	4	1.00	16	0.250
11	A	2	1	1.00	14	0.071
12	A	5	4	1.00	16	0.250
13	A	5	5	1.00	16	0.312
14	A	7	6	1.00	16	0.375
15	A	7	7	1.00	16	0.438

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
16	A	12	4	1.00	16	0.250
17	A	8	4	1.00	16	0.250
18	A	6	4	1.00	16	0.250
19	A	3	3	1.00	14	0.214
20	A	8	4	1.00	16	0.250
21	A	8	4	1.00	16	0.250
22	A	12	5	1.00	16	0.312
23	A	9	5	1.00	14	0.357
24	A	7	4	1.00	14	0.286
25	A	5	3	1.00	12	0.250
26	A	0	0	0.00	0	0.000
27	A	0	0	0.00	0	0.000
28	A	6	6	1.00	16	0.375
29	A	5	5	1.00	16	0.312
30	A	2	2	1.00	14	0.143
31	A	0	0	0.00	0	0.000
32	A	0	0	0.00	0	0.000
33	A	15	8	1.00	16	0.500
34	A	9	6	1.00	16	0.375
35	A	6	4	1.00	14	0.286
36	A	0	0	0.00	0	0.000
37	A	0	0	0.00	0	0.000
38	A	8	6	1.00	16	0.375
39	A	7	6	1.00	16	0.375
40	A	6	6	1.00	16	0.375
41	A	5	5	1.00	16	0.312

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
42	A	6	6	1.00	16	0.375
43	A	7	6	1.00	16	0.375
44	A	8	6	1.00	16	0.375
45	A	10	9	1.00	18	0.500
46	A	9	8	1.00	18	0.444
47	A	8	7	1.00	18	0.389
48	A	7	6	1.00	18	0.333
49	A	7	7	1.00	18	0.389
50	A	9	8	1.00	18	0.444
51	A	9	9	1.00	18	0.500
52	A	11	8	1.00	18	0.444
53	A	23	8	1.00	18	0.444
54	A	20	8	1.00	18	0.444
55	A	14	7	1.00	18	0.389
56	A	12	6	1.00	18	0.333
57	A	12	6	1.00	18	0.333
58	A	18	7	1.00	18	0.389
59	A	19	8	1.00	18	0.444
60	A	4	3	1.00	12	0.250
61	A	3	3	1.00	12	0.250
62	A	2	2	1.00	12	0.167
63	A	3	3	1.00	12	0.250
64	A	4	3	1.00	12	0.250
65	A	0	0	0.00	0	0.000
66	A	0	0	0.00	0	0.000
67	A	2	1	1.00	25	0.040

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
68	A	3	2	1.00	29	0.069
69	A	2	1	1.00	28	0.036
70	A	3	1	1.00	28	0.036
71	A	0	0	0.00	0	0.000
72	A	8	3	1.00	16	0.188
73	A	5	3	1.00	16	0.188
74	A	3	2	1.00	14	0.143
75	A	0	0	0.00	0	0.000
76	A	0	0	0.00	0	0.000
77	A	3	2	1.00	12	0.167
78	A	3	2	1.00	12	0.167
79	A	3	2	1.00	12	0.167
80	A	3	2	1.00	10	0.200
81	A	3	2	1.00	12	0.167
82	A	3	2	1.00	12	0.167
83	A	3	2	1.00	12	0.167
84	A	5	3	1.00	14	0.214
85	A	5	3	1.00	14	0.214
86	A	5	3	1.00	14	0.214
87	A	5	3	1.00	12	0.250
88	A	5	3	1.00	14	0.214
89	A	5	3	1.00	14	0.214
90	A	5	3	1.00	14	0.214
91	A	4	2	1.00	28	0.071
92	A	7	5	1.00	32	0.156
93	A	4	2	1.00	28	0.071

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
94	A	5	2	1.00	28	0.071
95	A	6	3	1.00	18	0.167
96	A	5	3	1.00	18	0.167
97	A	4	3	1.00	16	0.188
98	A	5	4	1.00	18	0.222
99	A	6	5	1.00	18	0.278
100	A	7	5	1.00	18	0.278
101	A	10	6	1.00	20	0.300
102	A	9	7	1.00	20	0.350
103	A	6	4	1.00	18	0.222
104	A	9	5	1.00	20	0.250
105	A	9	5	1.00	20	0.250
106	A	15	8	1.00	20	0.400
107	A	7	7	1.00	20	0.350
108	A	6	6	1.00	20	0.300
109	A	3	3	1.00	18	0.167
110	A	0	0	0.00	0	0.000
111	A	0	0	0.00	0	0.000
112	A	10	9	1.00	20	0.450
113	A	9	9	1.00	20	0.450
114	A	4	4	1.00	18	0.222
115	A	0	0	0.00	0	0.000
116	A	0	0	0.00	0	0.000
117	A	7	7	1.00	21	0.333
118	A	6	6	1.00	21	0.286
119	A	3	3	1.00	19	0.158

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
120	A	0	0	0.00	0	0.000
121	A	0	0	0.00	0	0.000
122	A	5	3	1.00	18	0.167
123	A	4	3	1.00	18	0.167
124	A	3	3	1.00	16	0.188
125	A	4	4	1.00	18	0.222
126	A	5	5	1.00	18	0.278
127	A	6	5	1.00	18	0.278
128	A	9	5	1.00	18	0.278
129	A	7	5	1.00	18	0.278
130	A	4	4	1.00	16	0.250
131	A	9	5	1.00	18	0.278
132	A	9	5	1.00	18	0.278
133	A	13	6	1.00	18	0.333
134	A	10	6	1.00	18	0.333
135	A	8	5	1.00	18	0.278
136	A	6	4	1.00	16	0.250
137	A	0	0	0.00	0	0.000
138	A	0	0	0.00	0	0.000
139	A	16	9	1.00	18	0.500
140	A	10	7	1.00	18	0.389
141	A	7	5	1.00	16	0.312
142	A	0	0	0.00	0	0.000
143	A	0	0	0.00	0	0.000
144	A	0	0	0.00	0	0.000
145	A	0	0	0.00	0	0.000

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
146	A	12	5	1.00	20	0.250
147	A	9	5	1.00	20	0.250
148	A	5	3	1.00	18	0.167
149	A	0	0	0.00	0	0.000
150	A	0	0	0.00	0	0.000
151	A	6	3	1.00	18	0.167
152	A	5	3	1.00	18	0.167
153	A	4	3	1.00	16	0.188
154	A	5	4	1.00	18	0.222
155	A	6	5	1.00	18	0.278
156	A	7	5	1.00	18	0.278
157	A	10	6	1.00	20	0.300
158	A	9	7	1.00	20	0.350
159	A	6	4	1.00	18	0.222
160	A	10	5	1.00	20	0.250
161	A	11	7	1.00	20	0.350
162	A	14	8	1.00	20	0.400
163	A	12	7	1.00	20	0.350
164	A	10	6	1.00	20	0.300
165	A	8	5	1.00	18	0.278
166	A	0	0	0.00	0	0.000
167	A	0	0	0.00	0	0.000
168	A	22	9	1.00	20	0.450
169	A	18	10	1.00	20	0.500
170	A	11	8	1.00	18	0.444
171	A	0	0	0.00	0	0.000

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
172	A	0	0	0.00	0	0.000
173	A	0	0	0.00	0	0.000
174	A	18	5	1.00	20	0.250
175	A	10	5	1.00	20	0.250
176	A	5	3	1.00	18	0.167
177	A	0	0	0.00	0	0.000
178	A	0	0	0.00	0	0.000
179	A	9	9	1.00	26	0.346
180	A	8	8	1.00	26	0.308
181	A	5	4	1.00	24	0.167
182	A	2	2	1.00	19	0.105
183	A	0	0	0.00	0	0.000
184	A	0	0	0.00	0	0.000
185	A	14	11	1.00	28	0.393
186	A	12	10	1.00	28	0.357
187	A	8	6	1.00	26	0.231
188	A	4	4	1.00	21	0.190
189	A	0	0	0.00	0	0.000
190	A	0	0	0.00	0	0.000
191	A	19	13	1.00	28	0.464
192	A	17	13	1.00	28	0.464
193	A	11	7	1.00	26	0.269
194	A	2	2	1.00	21	0.095
195	A	0	0	0.00	0	0.000
196	A	0	0	0.00	0	0.000
197	A	17	10	1.00	26	0.385

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
198	A	14	11	1.00	26	0.423
199	A	9	7	1.00	24	0.292
200	A	3	3	1.00	19	0.158
201	A	0	0	0.00	0	0.000
202	A	0	0	0.00	0	0.000
203	A	24	10	1.00	28	0.357
204	A	20	11	1.00	28	0.393
205	A	12	7	1.00	26	0.269
206	A	5	5	1.00	21	0.238
207	A	0	0	0.00	0	0.000
208	A	0	0	0.00	0	0.000
209	A	40	13	1.00	28	0.464
210	A	30	13	1.00	28	0.464
211	A	19	8	1.00	26	0.308
212	A	6	6	1.00	21	0.286
213	A	0	0	0.00	0	0.000
214	A	0	0	0.00	0	0.000
215	A	0	0	0.00	0	0.000
216	A	0	0	0.00	0	0.000
217	A	0	0	0.00	0	0.000
218	A	0	0	0.00	0	0.000
219	A	0	0	0.00	0	0.000
220	A	14	9	1.00	26	0.346
221	A	12	8	1.00	26	0.308
222	A	10	6	1.00	24	0.250
223	A	4	4	1.00	19	0.210

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
224	A	19	11	1.00	28	0.393
225	A	16	10	1.00	28	0.357
226	A	13	8	1.00	26	0.308
227	A	6	6	1.00	21	0.286
228	A	24	13	1.00	28	0.464
229	A	21	13	1.00	28	0.464
230	A	16	9	1.00	26	0.346
231	A	6	6	1.00	21	0.286
232	A	22	9	1.00	26	0.346
233	A	18	8	1.00	26	0.308
234	A	14	7	1.00	24	0.292
235	A	5	5	1.00	19	0.263
236	A	29	11	1.00	28	0.393
237	A	24	12	1.00	28	0.429
238	A	17	9	1.00	26	0.346
239	A	7	7	1.00	21	0.333
240	A	0	0	0.00	0	0.000
241	A	0	0	0.00	0	0.000
242	A	0	0	0.00	0	0.000
243	A	0	0	0.00	0	0.000
244	A	0	0	0.00	0	0.000
245	A	21	9	1.00	24	0.375
246	A	30	11	1.00	26	0.423
247	A	36	10	1.00	26	0.385
248	A	48	11	1.00	24	0.458
249	A	73	16	1.00	26	0.615

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
250	A	92	14	1.00	26	0.538
251	A	6	6	1.00	26	0.231
252	A	5	5	1.00	26	0.192
253	A	4	4	1.00	24	0.167
254	A	2	2	1.00	19	0.105
255	A	0	0	0.00	0	0.000
256	A	0	0	0.00	0	0.000
257	A	6	4	1.00	28	0.143
258	A	5	4	1.00	28	0.143
259	A	4	3	1.00	26	0.115
260	A	2	2	1.00	21	0.095
261	A	5	5	1.00	28	0.179
262	A	6	6	1.00	28	0.214
263	A	10	8	1.00	28	0.286
264	A	7	5	1.00	28	0.179
265	A	6	6	1.00	26	0.231
266	A	2	1	1.00	21	0.048
267	A	9	6	1.00	28	0.214
268	A	11	7	1.00	28	0.250
269	A	22	13	1.00	26	0.500
270	A	13	10	1.00	26	0.385
271	A	10	8	1.00	24	0.333
272	A	4	3	1.00	19	0.158
273	A	0	0	0.00	0	0.000
274	A	0	0	0.00	0	0.000
275	A	20	12	1.00	28	0.429

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
276	A	16	12	1.00	28	0.429
277	A	7	7	1.00	26	0.269
278	A	3	3	1.00	21	0.143
279	A	0	0	0.00	0	0.000
280	A	0	0	0.00	0	0.000
281	A	32	16	1.00	28	0.571
282	A	17	12	1.00	28	0.429
283	A	11	7	1.00	26	0.269
284	A	4	3	1.00	21	0.143
285	A	0	0	0.00	0	0.000
286	A	0	0	0.00	0	0.000
287	A	14	6	1.00	28	0.214
288	A	9	6	1.00	28	0.214
289	A	5	4	1.00	28	0.143
290	A	0	0	0.00	0	0.000
291	A	0	0	0.00	0	0.000
292	A	0	0	0.00	0	0.000
293	A	0	0	0.00	0	0.000
294	A	11	6	1.00	26	0.231
295	A	9	5	1.00	26	0.192
296	A	7	4	1.00	24	0.167
297	A	2	2	1.00	19	0.105
298	A	18	11	1.00	28	0.393
299	A	15	10	1.00	28	0.357
300	A	12	8	1.00	26	0.308
301	A	5	5	1.00	21	0.238

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
302	A	21	14	1.00	28	0.500
303	A	16	10	1.00	28	0.357
304	A	13	10	1.00	26	0.385
305	A	3	2	1.00	21	0.095
306	A	29	10	1.00	26	0.385
307	A	24	9	1.00	26	0.346
308	A	19	8	1.00	24	0.333
309	A	6	4	1.00	19	0.210
310	A	29	13	1.00	28	0.464
311	A	24	14	1.00	28	0.500
312	A	15	11	1.00	26	0.423
313	A	5	5	1.00	21	0.238
314	A	0	0	0.00	0	0.000
315	A	0	0	0.00	0	0.000
316	A	0	0	0.00	0	0.000
317	A	0	0	0.00	0	0.000
318	A	0	0	0.00	0	0.000
319	A	4	4	1.00	24	0.167
320	A	9	6	1.00	26	0.231
321	A	11	7	1.00	26	0.269
322	A	6	6	1.00	24	0.250
323	A	12	9	1.00	26	0.346
324	A	19	11	1.00	26	0.423
325	A	33	14	1.00	32	0.438
326	A	27	13	1.00	32	0.406
327	A	21	11	1.00	30	0.367

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
328	A	6	6	1.00	25	0.240
329	A	34	17	1.00	34	0.500
330	A	26	13	1.00	34	0.382
331	A	22	13	1.00	32	0.406
332	A	4	3	1.00	27	0.111
333	A	53	18	1.00	34	0.529
334	A	41	18	1.00	34	0.529
335	A	31	14	1.00	32	0.438
336	A	6	6	1.00	27	0.222
337	A	48	19	1.00	34	0.559
338	A	37	17	1.00	34	0.500
339	A	28	15	1.00	32	0.469
340	A	4	3	1.00	27	0.111
341	A	66	20	1.00	36	0.556
342	A	53	22	1.00	36	0.611
343	A	38	16	1.00	34	0.471
344	A	6	6	1.00	29	0.207
345	A	85	21	1.00	36	0.583
346	A	60	20	1.00	36	0.556
347	A	45	17	1.00	34	0.500
348	A	4	3	1.00	29	0.103

Chapter 3

Listing of integrals

3.1 $\int (c+dx)^4 \sin(a+bx)\,dx$

Optimal. Leaf size=92

$$-\frac{24d^4\cos(a+bx)}{b^5}-\frac{24d^3(c+dx)\sin(a+bx)}{b^4}+\frac{12d^2(c+dx)^2\cos(a+bx)}{b^3}+\frac{4d(c+dx)^3\sin(a+bx)}{b^2}-\frac{(c+dx)^4\cos(a+bx)}{b}$$

```
[Out] -24*d^4*cos(b*x+a)/b^5+12*d^2*(d*x+c)^2*cos(b*x+a)/b^3-(d*x+c)^4*cos(b*x+a)
/b-24*d^3*(d*x+c)*sin(b*x+a)/b^4+4*d*(d*x+c)^3*sin(b*x+a)/b^2
```

Rubi [A] time = 0.09, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3296, 2638}

$$-\frac{24d^3(c+dx)\sin(a+bx)}{b^4}+\frac{12d^2(c+dx)^2\cos(a+bx)}{b^3}+\frac{4d(c+dx)^3\sin(a+bx)}{b^2}-\frac{24d^4\cos(a+bx)}{b^5}-\frac{(c+dx)^4\cos(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^4*Sin[a + b*x],x]
```

```
[Out] (-24*d^4*Cos[a + b*x])/b^5 + (12*d^2*(c + d*x)^2*Cos[a + b*x])/b^3 - ((c +
d*x)^4*Cos[a + b*x])/b - (24*d^3*(c + d*x)*Sin[a + b*x])/b^4 + (4*d*(c + d*
x)^3*Sin[a + b*x])/b^2
```

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (c+dx)^4\sin(a+bx)\,dx = -\frac{(c+dx)^4\cos(a+bx)}{b}+\frac{(4d)\int (c+dx)^3\cos(a+bx)\,dx}{b}$$
$$= -\frac{(c+dx)^4\cos(a+bx)}{b}+\frac{4d(c+dx)^3\sin(a+bx)}{b^2}-\frac{\left(12d^2\right)\int (c+dx)^2\sin(a+bx)\,dx}{b^2}$$
$$= \frac{12d^2(c+dx)^2\cos(a+bx)}{b^3}-\frac{(c+dx)^4\cos(a+bx)}{b}+\frac{4d(c+dx)^3\sin(a+bx)}{b^2}-\frac{\left(24d\right.}{}$$
$$= \frac{12d^2(c+dx)^2\cos(a+bx)}{b^3}-\frac{(c+dx)^4\cos(a+bx)}{b}-\frac{24d^3(c+dx)\sin(a+bx)}{b^4}+\frac{4d(}{}$$
$$= -\frac{24d^4\cos(a+bx)}{b^5}+\frac{12d^2(c+dx)^2\cos(a+bx)}{b^3}-\frac{(c+dx)^4\cos(a+bx)}{b}-\frac{24d^3(c+}{}$$

Mathematica [A] time = 0.39, size = 77, normalized size = 0.84

$$\frac{4bd(c+dx)\sin(a+bx)\left(b^2(c+dx)^2-6d^2\right)-\cos(a+bx)\left(b^4(c+dx)^4-12b^2d^2(c+dx)^2+24d^4\right)}{b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^4*Sin[a + b*x],x]
```

```
[Out] (-((24*d^4 - 12*b^2*d^2*(c + d*x)^2 + b^4*(c + d*x)^4)*Cos[a + b*x]) + 4*b*
d*(c + d*x)*(-6*d^2 + b^2*(c + d*x)^2)*Sin[a + b*x])/b^5
```

fricas [A] time = 0.87, size = 170, normalized size = 1.85

$$-\frac{\left(b^4d^4x^4+4\,b^4cd^3x^3+b^4c^4-12\,b^2c^2d^2+24\,d^4+6\left(b^4c^2d^2-2\,b^2d^4\right)x^2+4\left(b^4c^3d-6\,b^2cd^3\right)x\right)\cos\left(bx+a\right)-4}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -((b^4*d^4*x^4 + 4*b^4*c*d^3*x^3 + b^4*c^4 - 12*b^2*c^2*d^2 + 24*d^4 + 6*(b
^4*c^2*d^2 - 2*b^2*d^4)*x^2 + 4*(b^4*c^3*d - 6*b^2*c*d^3)*x)*cos(b*x + a) -
 4*(b^3*d^4*x^3 + 3*b^3*c*d^3*x^2 + b^3*c^3*d - 6*b*c*d^3 + 3*(b^3*c^2*d^2
- 2*b*d^4)*x)*sin(b*x + a))/b^5
```

giac [A] time = 0.32, size = 171, normalized size = 1.86

$$-\frac{\left(b^4d^4x^4+4\,b^4cd^3x^3+6\,b^4c^2d^2x^2+4\,b^4c^3dx+b^4c^4-12\,b^2d^4x^2-24\,b^2cd^3x-12\,b^2c^2d^2+24\,d^4\right)\cos\left(bx+a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(b^4*d^4*x^4 + 4*b^4*c*d^3*x^3 + 6*b^4*c^2*d^2*x^2 + 4*b^4*c^3*d*x + b^4*c
^4 - 12*b^2*d^4*x^2 - 24*b^2*c*d^3*x - 12*b^2*c^2*d^2 + 24*d^4)*cos(b*x + a
)/b^5 + 4*(b^3*d^4*x^3 + 3*b^3*c*d^3*x^2 + 3*b^3*c^2*d^2*x + b^3*c^3*d - 6*
b*d^4*x - 6*b*c*d^3)*sin(b*x + a)/b^5
```

maple [B] time = 0.02, size = 551, normalized size = 5.99

$$\frac{\frac{d^4\left(-(bx+a)^4\cos(bx+a)+4(bx+a)^3\sin(bx+a)+12(bx+a)^2\cos(bx+a)-24\cos(bx+a)-24(bx+a)\sin(bx+a)\right)}{b^4}-\frac{4a\,d^4\left(-(bx+a)^3\cos(bx+a)+3(bx+a)^2\sin(\right.}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^4*sin(b*x+a),x)
```

```
[Out] 1/b*(1/b^4*d^4*(-(b*x+a)^4*cos(b*x+a)+4*(b*x+a)^3*sin(b*x+a)+12*(b*x+a)^2*c
os(b*x+a)-24*cos(b*x+a)-24*(b*x+a)*sin(b*x+a))-4/b^4*a*d^4*(-(b*x+a)^3*cos(
b*x+a)+3*(b*x+a)^2*sin(b*x+a)-6*sin(b*x+a)+6*(b*x+a)*cos(b*x+a))+4/b^3*c*d^
3*(-(b*x+a)^3*cos(b*x+a)+3*(b*x+a)^2*sin(b*x+a)-6*sin(b*x+a)+6*(b*x+a)*cos(
b*x+a))+6/b^4*a^2*d^4*(-(b*x+a)^2*cos(b*x+a)+2*cos(b*x+a)+2*(b*x+a)*sin(b*x
+a))-12/b^3*a*c*d^3*(-(b*x+a)^2*cos(b*x+a)+2*cos(b*x+a)+2*(b*x+a)*sin(b*x+a
))+6/b^2*c^2*d^2*(-(b*x+a)^2*cos(b*x+a)+2*cos(b*x+a)+2*(b*x+a)*sin(b*x+a))-
4/b^4*a^3*d^4*(sin(b*x+a)-(b*x+a)*cos(b*x+a))+12/b^3*a^2*c*d^3*(sin(b*x+a)-
(b*x+a)*cos(b*x+a))-12/b^2*a*c^2*d^2*(sin(b*x+a)-(b*x+a)*cos(b*x+a))+4/b*c^
3*d*(sin(b*x+a)-(b*x+a)*cos(b*x+a))-1/b^4*a^4*d^4*cos(b*x+a)+4/b^3*a^3*c*d^
3*cos(b*x+a)-6/b^2*a^2*c^2*d^2*cos(b*x+a)+4/b*a*c^3*d*cos(b*x+a)-c^4*cos(b*
x+a))
```

maxima [B] time = 0.35, size = 490, normalized size = 5.33

$$-\frac{c^4\cos\left(bx+a\right)-\frac{4\,ac^3d\cos(bx+a)}{b}+\frac{6\,a^2c^2d^2\cos(bx+a)}{b^2}-\frac{4\,a^3cd^3\cos(bx+a)}{b^3}+\frac{a^4d^4\cos(bx+a)}{b^4}+\frac{4\,((bx+a)\cos(bx+a)-\sin(bx+a))c^3d}{b}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^4*sin(b*x+a),x, algorithm="maxima")
```

```
[Out] -(c^4*cos(b*x + a) - 4*a*c^3*d*cos(b*x + a)/b + 6*a^2*c^2*d^2*cos(b*x + a)/
b^2 - 4*a^3*c*d^3*cos(b*x + a)/b^3 + a^4*d^4*cos(b*x + a)/b^4 + 4*((b*x + a
)*cos(b*x + a) - sin(b*x + a))*c^3*d/b - 12*((b*x + a)*cos(b*x + a) - sin(b
*x + a))*a*c^2*d^2/b^2 + 12*((b*x + a)*cos(b*x + a) - sin(b*x + a))*a^2*c*d
^3/b^3 - 4*((b*x + a)*cos(b*x + a) - sin(b*x + a))*a^3*d^4/b^4 + 6*(((b*x +
 a)^2 - 2)*cos(b*x + a) - 2*(b*x + a)*sin(b*x + a))*c^2*d^2/b^2 - 12*(((b*x
 + a)^2 - 2)*cos(b*x + a) - 2*(b*x + a)*sin(b*x + a))*a*c*d^3/b^3 + 6*(((b*
x + a)^2 - 2)*cos(b*x + a) - 2*(b*x + a)*sin(b*x + a))*a^2*d^4/b^4 + 4*(((b
*x + a)^3 - 6*b*x - 6*a)*cos(b*x + a) - 3*((b*x + a)^2 - 2)*sin(b*x + a))*c
*d^3/b^3 - 4*(((b*x + a)^3 - 6*b*x - 6*a)*cos(b*x + a) - 3*((b*x + a)^2 - 2
)*sin(b*x + a))*a*d^4/b^4 + (((b*x + a)^4 - 12*(b*x + a)^2 + 24)*cos(b*x +
a) - 4*((b*x + a)^3 - 6*b*x - 6*a)*sin(b*x + a))*d^4/b^4)/b
```

mupad [B] time = 0.79, size = 221, normalized size = 2.40

$$\frac{4\,x\,\cos\left(a+b\,x\right)\,\left(6\,c\,d^3-b^2\,c^3\,d\right)}{b^3}-\frac{4\,\sin\left(a+b\,x\right)\,\left(6\,c\,d^3-b^2\,c^3\,d\right)}{b^4}-\frac{d^4\,x^4\,\cos\left(a+b\,x\right)}{b}-\frac{\cos\left(a+b\,x\right)\,\left(b^4\,c^4-12\right.}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(c + d*x)^4,x)
```

```
[Out] (4*x*cos(a + b*x)*(6*c*d^3 - b^2*c^3*d))/b^3 - (4*sin(a + b*x)*(6*c*d^3 - b
^2*c^3*d))/b^4 - (d^4*x^4*cos(a + b*x))/b - (cos(a + b*x)*(24*d^4 + b^4*c^4
 - 12*b^2*c^2*d^2))/b^5 + (4*d^4*x^3*sin(a + b*x))/b^2 - (12*x*sin(a + b*x)
*(2*d^4 - b^2*c^2*d^2))/b^4 + (6*x^2*cos(a + b*x)*(2*d^4 - b^2*c^2*d^2))/b^
3 - (4*c*d^3*x^3*cos(a + b*x))/b + (12*c*d^3*x^2*sin(a + b*x))/b^2
```

sympy [A] time = 3.43, size = 311, normalized size = 3.38

$$\begin{cases} -\frac{c^4\cos(a+bx)}{b} - \frac{4c^3dx\cos(a+bx)}{b} - \frac{6c^2d^2x^2\cos(a+bx)}{b} - \frac{4cd^3x^3\cos(a+bx)}{b} - \frac{d^4x^4\cos(a+bx)}{b} + \frac{4c^3d\sin(a+bx)}{b^2} + \frac{12c^2d^2x\sin(a+bx)}{b^2} + \cdots \\ \left(c^4x + 2c^3dx^2 + 2c^2d^2x^3 + cd^3x^4 + \frac{d^4x^5}{5}\right)\sin(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**4*sin(b*x+a),x)
```

```
[Out] Piecewise((-c**4*cos(a + b*x)/b - 4*c**3*d*x*cos(a + b*x)/b - 6*c**2*d**2*x
**2*cos(a + b*x)/b - 4*c*d**3*x**3*cos(a + b*x)/b - d**4*x**4*cos(a + b*x)/
b + 4*c**3*d*sin(a + b*x)/b**2 + 12*c**2*d**2*x*sin(a + b*x)/b**2 + 12*c*d*
*3*x**2*sin(a + b*x)/b**2 + 4*d**4*x**3*sin(a + b*x)/b**2 + 12*c**2*d**2*co
s(a + b*x)/b**3 + 24*c*d**3*x*cos(a + b*x)/b**3 + 12*d**4*x**2*cos(a + b*x)
/b**3 - 24*c*d**3*sin(a + b*x)/b**4 - 24*d**4*x*sin(a + b*x)/b**4 - 24*d**4
*cos(a + b*x)/b**5, Ne(b, 0)), ((c**4*x + 2*c**3*d*x**2 + 2*c**2*d**2*x**3
+ c*d**3*x**4 + d**4*x**5/5)*sin(a), True))
```

3.2 $\int (c+dx)^3 \sin(a+bx)\,dx$

Optimal. Leaf size=71

$$-\frac{6d^3\sin(a+bx)}{b^4}+\frac{6d^2(c+dx)\cos(a+bx)}{b^3}+\frac{3d(c+dx)^2\sin(a+bx)}{b^2}-\frac{(c+dx)^3\cos(a+bx)}{b}$$

```
[Out] 6*d^2*(d*x+c)*cos(b*x+a)/b^3-(d*x+c)^3*cos(b*x+a)/b-6*d^3*sin(b*x+a)/b^4+3*
d*(d*x+c)^2*sin(b*x+a)/b^2
```

Rubi [A] time = 0.07, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3296, 2637}

$$\frac{6d^2(c+dx)\cos(a+bx)}{b^3}+\frac{3d(c+dx)^2\sin(a+bx)}{b^2}-\frac{6d^3\sin(a+bx)}{b^4}-\frac{(c+dx)^3\cos(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*Sin[a + b*x],x]
```

```
[Out] (6*d^2*(c + d*x)*Cos[a + b*x])/b^3 - ((c + d*x)^3*Cos[a + b*x])/b - (6*d^3*
Sin[a + b*x])/b^4 + (3*d*(c + d*x)^2*Sin[a + b*x])/b^2
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int (c+dx)^3 \sin(a+bx)\,dx &= -\frac{(c+dx)^3\cos(a+bx)}{b} + \frac{(3d)\int (c+dx)^2\cos(a+bx)\,dx}{b} \\
&= -\frac{(c+dx)^3\cos(a+bx)}{b} + \frac{3d(c+dx)^2\sin(a+bx)}{b^2} - \frac{\left(6d^2\right)\int (c+dx)\sin(a+bx)\,dx}{b^2} \\
&= \frac{6d^2(c+dx)\cos(a+bx)}{b^3} - \frac{(c+dx)^3\cos(a+bx)}{b} + \frac{3d(c+dx)^2\sin(a+bx)}{b^2} - \frac{\left(6d^3\right)
\\
&= \frac{6d^2(c+dx)\cos(a+bx)}{b^3} - \frac{(c+dx)^3\cos(a+bx)}{b} - \frac{6d^3\sin(a+bx)}{b^4} + \frac{3d(c+dx)^2\sin
\end{aligned}
$$

Mathematica [A] time = 0.22, size = 62, normalized size = 0.87

$$\frac{3d\sin(a+bx)\left(b^2(c+dx)^2-2d^2\right)-b(c+dx)\cos(a+bx)\left(b^2(c+dx)^2-6d^2\right)}{b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3*Sin[a + b*x],x]
```

```
[Out] (-(b*(c + d*x)*(-6*d^2 + b^2*(c + d*x)^2)*Cos[a + b*x]) + 3*d*(-2*d^2 + b^2
*(c + d*x)^2)*Sin[a + b*x])/b^4
```

fricas [A] time = 0.70, size = 110, normalized size = 1.55

$$-\frac{\left(b^3d^3x^3+3\,b^3cd^2x^2+b^3c^3-6\,bcd^2+3\left(b^3c^2d-2\,bd^3\right)x\right)\cos\left(bx+a\right)-3\left(b^2d^3x^2+2\,b^2cd^2x+b^2c^2d-2\,d^3\right)\sin}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -((b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 - 6*b*c*d^2 + 3*(b^3*c^2*d - 2*b
*d^3)*x)*cos(b*x + a) - 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)
*sin(b*x + a))/b^4
```

giac [A] time = 1.61, size = 111, normalized size = 1.56

$$-\frac{\left(b^3d^3x^3+3\,b^3cd^2x^2+3\,b^3c^2dx+b^3c^3-6\,bd^3x-6\,bcd^2\right)\cos\left(bx+a\right)}{b^4}+\frac{3\left(b^2d^3x^2+2\,b^2cd^2x+b^2c^2d-2\,d^3\right)\sin}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3 - 6*b*d^3*x - 6*b
*c*d^2)*cos(b*x + a)/b^4 + 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d
^3)*sin(b*x + a)/b^4
```

maple [B] time = 0.02, size = 308, normalized size = 4.34

$$\frac{\frac{d^3\left(-(bx+a)^3\cos(bx+a)+3(bx+a)^2\sin(bx+a)-6\sin(bx+a)+6(bx+a)\cos(bx+a)\right)}{b^3}-\frac{3a\,d^3\left(-(bx+a)^2\cos(bx+a)+2\cos(bx+a)+2(bx+a)\sin(bx+a)\right)}{b^3}+\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*sin(b*x+a),x)
```

```
[Out] 1/b*(1/b^3*d^3*(-(b*x+a)^3*cos(b*x+a)+3*(b*x+a)^2*sin(b*x+a)-6*sin(b*x+a)+6
*(b*x+a)*cos(b*x+a))-3/b^3*a*d^3*(-(b*x+a)^2*cos(b*x+a)+2*cos(b*x+a)+2*(b*x
+a)*sin(b*x+a))+3/b^2*c*d^2*(-(b*x+a)^2*cos(b*x+a)+2*cos(b*x+a)+2*(b*x+a)*s
in(b*x+a))+3/b^3*a^2*d^3*(sin(b*x+a)-(b*x+a)*cos(b*x+a))-6/b^2*a*c*d^2*(sin
(b*x+a)-(b*x+a)*cos(b*x+a))+3/b*c^2*d*(sin(b*x+a)-(b*x+a)*cos(b*x+a))+1/b^3
*a^3*d^3*cos(b*x+a)-3/b^2*a^2*c*d^2*cos(b*x+a)+3/b*a*c^2*d*cos(b*x+a)-c^3*c
os(b*x+a))
```

maxima [B] time = 0.43, size = 285, normalized size = 4.01

$$-\frac{c^3\cos(bx+a)-\frac{3\,ac^2d\cos(bx+a)}{b}+\frac{3\,a^2cd^2\cos(bx+a)}{b^2}-\frac{a^3d^3\cos(bx+a)}{b^3}+\frac{3\,((bx+a)\cos(bx+a)-\sin(bx+a))c^2d}{b}-\frac{6\,((bx+a)\cos(bx+a)-\cdots}{b^2}\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(c^3*cos(b*x + a) - 3*a*c^2*d*cos(b*x + a)/b + 3*a^2*c*d^2*cos(b*x + a)/b^
2 - a^3*d^3*cos(b*x + a)/b^3 + 3*((b*x + a)*cos(b*x + a) - sin(b*x + a))*c^
2*d/b - 6*((b*x + a)*cos(b*x + a) - sin(b*x + a))*a*c*d^2/b^2 + 3*((b*x + a
)*cos(b*x + a) - sin(b*x + a))*a^2*d^3/b^3 + 3*(((b*x + a)^2 - 2)*cos(b*x +
 a) - 2*(b*x + a)*sin(b*x + a))*c*d^2/b^2 - 3*(((b*x + a)^2 - 2)*cos(b*x +
a) - 2*(b*x + a)*sin(b*x + a))*a*d^3/b^3 + (((b*x + a)^3 - 6*b*x - 6*a)*cos
(b*x + a) - 3*((b*x + a)^2 - 2)*sin(b*x + a))*d^3/b^3)/b
```

mupad [B] time = 0.62, size = 147, normalized size = 2.07

$$\frac{\cos(a+b\,x)\,\left(6\,c\,d^2-b^2\,c^3\right)}{b^3}-\frac{3\,\sin(a+b\,x)\,\left(2\,d^3-b^2\,c^2\,d\right)}{b^4}-\frac{d^3\,x^3\,\cos(a+b\,x)}{b}+\frac{3\,d^3\,x^2\,\sin(a+b\,x)}{b^2}+\frac{3\,x\,\cos\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(c + d*x)^3,x)
```

```
[Out] (cos(a + b*x)*(6*c*d^2 - b^2*c^3))/b^3 - (3*sin(a + b*x)*(2*d^3 - b^2*c^2*d
))/b^4 - (d^3*x^3*cos(a + b*x))/b + (3*d^3*x^2*sin(a + b*x))/b^2 + (3*x*cos
(a + b*x)*(2*d^3 - b^2*c^2*d))/b^3 + (6*c*d^2*x*sin(a + b*x))/b^2 - (3*c*d^
2*x^2*cos(a + b*x))/b
```

sympy [A] time = 1.61, size = 202, normalized size = 2.85

$$\begin{cases} -\frac{c^3\cos(a+bx)}{b} - \frac{3c^2dx\cos(a+bx)}{b} - \frac{3cd^2x^2\cos(a+bx)}{b} - \frac{d^3x^3\cos(a+bx)}{b} + \frac{3c^2d\sin(a+bx)}{b^2} + \frac{6cd^2x\sin(a+bx)}{b^2} + \frac{3d^3x^2\sin(a+bx)}{b^2} + \frac{6cd^2}{} \\ \left(c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4}\right)\sin(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*sin(b*x+a),x)
```

```
[Out] Piecewise((-c**3*cos(a + b*x)/b - 3*c**2*d*x*cos(a + b*x)/b - 3*c*d**2*x**2
*cos(a + b*x)/b - d**3*x**3*cos(a + b*x)/b + 3*c**2*d*sin(a + b*x)/b**2 + 6
*c*d**2*x*sin(a + b*x)/b**2 + 3*d**3*x**2*sin(a + b*x)/b**2 + 6*c*d**2*cos(
a + b*x)/b**3 + 6*d**3*x*cos(a + b*x)/b**3 - 6*d**3*sin(a + b*x)/b**4, Ne(b
, 0)), ((c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3 + d**3*x**4/4)*sin(a), True
))
```

3.3 $\int (c+dx)^2 \sin(a+bx)\,dx$

Optimal. Leaf size=50

$$\frac{2d^2\cos(a+bx)}{b^3}+\frac{2d(c+dx)\sin(a+bx)}{b^2}-\frac{(c+dx)^2\cos(a+bx)}{b}$$

```
[Out] 2*d^2*cos(b*x+a)/b^3-(d*x+c)^2*cos(b*x+a)/b+2*d*(d*x+c)*sin(b*x+a)/b^2
```

Rubi [A] time = 0.04, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3296, 2638}

$$\frac{2d(c+dx)\sin(a+bx)}{b^2}+\frac{2d^2\cos(a+bx)}{b^3}-\frac{(c+dx)^2\cos(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*Sin[a + b*x],x]
```

```
[Out] (2*d^2*Cos[a + b*x])/b^3 - ((c + d*x)^2*Cos[a + b*x])/b + (2*d*(c + d*x)*Si
n[a + b*x])/b^2
```

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int (c+dx)^2\sin(a+bx)\,dx &= -\frac{(c+dx)^2\cos(a+bx)}{b}+\frac{(2d)\int (c+dx)\cos(a+bx)\,dx}{b}\\ &= -\frac{(c+dx)^2\cos(a+bx)}{b}+\frac{2d(c+dx)\sin(a+bx)}{b^2}-\frac{\left(2d^2\right)\int \sin(a+bx)\,dx}{b^2}\\ &= \frac{2d^2\cos(a+bx)}{b^3}-\frac{(c+dx)^2\cos(a+bx)}{b}+\frac{2d(c+dx)\sin(a+bx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.19, size = 45, normalized size = 0.90

$$\frac{2bd(c+dx)\sin(a+bx)-\cos(a+bx)\left(b^2(c+dx)^2-2d^2\right)}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*Sin[a + b*x],x]
```

```
[Out] (-((-2*d^2 + b^2*(c + d*x)^2)*Cos[a + b*x]) + 2*b*d*(c + d*x)*Sin[a + b*x])
/b^3
```

fricas [A] time = 0.57, size = 63, normalized size = 1.26

$$-\frac{\left(b^2d^2x^2+2\,b^2cdx+b^2c^2-2\,d^2\right)\cos\left(bx+a\right)-2\left(bd^2x+bcd\right)\sin\left(bx+a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*d^2)*cos(b*x + a) - 2*(b*d^2*x +
 b*c*d)*sin(b*x + a))/b^3
```

giac [A] time = 1.05, size = 65, normalized size = 1.30

$$-\frac{\left(b^2d^2x^2+2\,b^2cdx+b^2c^2-2\,d^2\right)\cos\left(bx+a\right)}{b^3}+\frac{2\left(bd^2x+bcd\right)\sin\left(bx+a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*d^2)*cos(b*x + a)/b^3 + 2*(b*d^2*
x + b*c*d)*sin(b*x + a)/b^3
```

maple [B] time = 0.02, size = 148, normalized size = 2.96

$$\frac{\frac{d^2\left(-(bx+a)^2\cos(bx+a)+2\cos(bx+a)+2(bx+a)\sin(bx+a)\right)}{b^2}-\frac{2a\,d^2(\sin(bx+a)-(bx+a)\cos(bx+a))}{b^2}+\frac{2cd(\sin(bx+a)-(bx+a)\cos(bx+a))}{b}-\frac{a^2d^2\cos(b}{b^2}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*sin(b*x+a),x)
```

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

maxima [B] time = 0.66, size = 141, normalized size = 2.82

$$-\frac{c^2\cos(bx+a)-\frac{2\,acd\cos(bx+a)}{b}+\frac{a^2d^2\cos(bx+a)}{b^2}+\frac{2\,((bx+a)\cos(bx+a)-\sin(bx+a))cd}{b}-\frac{2\,((bx+a)\cos(bx+a)-\sin(bx+a))ad^2}{b^2}+\frac{(((bx\cdots}{}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(c^2*cos(b*x + a) - 2*a*c*d*cos(b*x + a)/b + a^2*d^2*cos(b*x + a)/b^2 + 2*
((b*x + a)*cos(b*x + a) - sin(b*x + a))*c*d/b - 2*((b*x + a)*cos(b*x + a) -
 sin(b*x + a))*a*d^2/b^2 + (((b*x + a)^2 - 2)*cos(b*x + a) - 2*(b*x + a)*si
n(b*x + a))*d^2/b^2)/b
```

mupad [B] time = 0.55, size = 84, normalized size = 1.68

$$\frac{\cos(a+b\,x)\,\left(2\,d^2-b^2\,c^2\right)}{b^3}-\frac{d^2\,x^2\,\cos(a+b\,x)}{b}+\frac{2\,c\,d\,\sin(a+b\,x)}{b^2}+\frac{2\,d^2\,x\,\sin(a+b\,x)}{b^2}-\frac{2\,c\,d\,x\,\cos(a+b\,x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(c + d*x)^2,x)
```

```
[Out] (cos(a + b*x)*(2*d^2 - b^2*c^2))/b^3 - (d^2*x^2*cos(a + b*x))/b + (2*c*d*si
n(a + b*x))/b^2 + (2*d^2*x*sin(a + b*x))/b^2 - (2*c*d*x*cos(a + b*x))/b
```

sympy [A] time = 0.73, size = 112, normalized size = 2.24

$$\begin{cases} -\frac{c^2\cos(a+bx)}{b}-\frac{2cdx\cos(a+bx)}{b}-\frac{d^2x^2\cos(a+bx)}{b}+\frac{2cd\sin(a+bx)}{b^2}+\frac{2d^2x\sin(a+bx)}{b^2}+\frac{2d^2\cos(a+bx)}{b^3} & \text{for } b\neq 0\\ \left(c^2x+cdx^2+\frac{d^2x^3}{3}\right)\sin(a) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*sin(b*x+a),x)
```

```
[Out] Piecewise((-c**2*cos(a + b*x)/b - 2*c*d*x*cos(a + b*x)/b - d**2*x**2*cos(a
+ b*x)/b + 2*c*d*sin(a + b*x)/b**2 + 2*d**2*x*sin(a + b*x)/b**2 + 2*d**2*co
s(a + b*x)/b**3, Ne(b, 0)), ((c**2*x + c*d*x**2 + d**2*x**3/3)*sin(a), True
))
```

3.4 $\int (c+dx)\sin(a+bx)\,dx$

Optimal. Leaf size=28

$$\frac{d\sin(a+bx)}{b^2}-\frac{(c+dx)\cos(a+bx)}{b}$$

```
[Out] -(d*x+c)*cos(b*x+a)/b+d*sin(b*x+a)/b^2
```

Rubi [A] time = 0.02, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3296, 2637}

$$\frac{d\sin(a+bx)}{b^2}-\frac{(c+dx)\cos(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*Sin[a + b*x],x]
```

```
[Out] -(((c + d*x)*Cos[a + b*x])/b) + (d*Sin[a + b*x])/b^2
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int (c+dx)\sin(a+bx)\,dx &= -\frac{(c+dx)\cos(a+bx)}{b}+\frac{d\int \cos(a+bx)\,dx}{b}\\ &= -\frac{(c+dx)\cos(a+bx)}{b}+\frac{d\sin(a+bx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.08, size = 27, normalized size = 0.96

$$\frac{d\sin(a+bx)-b(c+dx)\cos(a+bx)}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*Sin[a + b*x],x]
[Out] (-(b*(c + d*x)*Cos[a + b*x]) + d*Sin[a + b*x])/b^2
```

fricas [A] time = 0.69, size = 30, normalized size = 1.07

$$-\frac{(bdx + bc)\cos(bx + a) - d\sin(bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*sin(b*x+a),x, algorithm="fricas")
[Out] -((b*d*x + b*c)*cos(b*x + a) - d*sin(b*x + a))/b^2
```

giac [A] time = 1.88, size = 31, normalized size = 1.11

$$-\frac{(bdx + bc)\cos(bx + a)}{b^2} + \frac{d\sin(bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*sin(b*x+a),x, algorithm="giac")
[Out] -(b*d*x + b*c)*cos(b*x + a)/b^2 + d*sin(b*x + a)/b^2
```

maple [A] time = 0.02, size = 52, normalized size = 1.86

$$\frac{\frac{d(\sin(bx+a)-(bx+a)\cos(bx+a))}{b} + \frac{da\cos(bx+a)}{b} - c\cos(bx + a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*sin(b*x+a),x)
[Out] 1/b*(1/b*d*(sin(b*x+a)-(b*x+a)*cos(b*x+a))+1/b*d*a*cos(b*x+a)-c*cos(b*x+a))
```

maxima [A] time = 0.48, size = 53, normalized size = 1.89

$$-\frac{c\cos(bx + a) - \frac{ad\cos(bx+a)}{b} + \frac{((bx+a)\cos(bx+a)-\sin(bx+a))d}{b}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*sin(b*x+a),x, algorithm="maxima")
```

```
[Out] -(c*cos(b*x + a) - a*d*cos(b*x + a)/b + ((b*x + a)*cos(b*x + a) - sin(b*x +
 a))*d/b)/b
```

mupad [B] time = 0.53, size = 35, normalized size = 1.25

$$\frac{d\,\sin\left(a+b\,x\right)}{b^2}-\frac{c\,\cos\left(a+b\,x\right)+d\,x\,\cos\left(a+b\,x\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(c + d*x),x)
```

```
[Out] (d*sin(a + b*x))/b^2 - (c*cos(a + b*x) + d*x*cos(a + b*x))/b
```

sympy [A] time = 0.25, size = 46, normalized size = 1.64

$$\begin{cases} -\frac{c\cos\left(a+bx\right)}{b}-\frac{dx\cos\left(a+bx\right)}{b}+\frac{d\sin\left(a+bx\right)}{b^2} & \text{for } b\neq 0 \\ \left(cx+\frac{dx^2}{2}\right)\sin\left(a\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*sin(b*x+a),x)
```

```
[Out] Piecewise((-c*cos(a + b*x)/b - d*x*cos(a + b*x)/b + d*sin(a + b*x)/b**2, Ne
(b, 0)), ((c*x + d*x**2/2)*sin(a), True))
```

3.5 $\int \frac{\sin(a+bx)}{c+dx}\,dx$

Optimal. Leaf size=51

$$\frac{\sin\left(a-\frac{bc}{d}\right)\text{Ci}\left(\frac{bc}{d}+bx\right)}{d}+\frac{\cos\left(a-\frac{bc}{d}\right)\text{Si}\left(\frac{bc}{d}+bx\right)}{d}$$

```
[Out] cos(a-b*c/d)*Si(b*c/d+b*x)/d+Ci(b*c/d+b*x)*sin(a-b*c/d)/d
```

Rubi [A] time = 0.10, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3303, 3299, 3302}

$$\frac{\sin\left(a-\frac{bc}{d}\right)\text{CosIntegral}\left(\frac{bc}{d}+bx\right)}{d}+\frac{\cos\left(a-\frac{bc}{d}\right)\text{Si}\left(\frac{bc}{d}+bx\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]/(c + d*x),x]
```

```
[Out] (CosIntegral[(b*c)/d + b*x]*Sin[a - (b*c)/d])/d + (Cos[a - (b*c)/d]*SinInte
gral[(b*c)/d + b*x])/d
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rubi steps

$$\int \frac{\sin(a+bx)}{c+dx}\,dx = \cos\left(a-\frac{bc}{d}\right)\int \frac{\sin\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx + \sin\left(a-\frac{bc}{d}\right)\int \frac{\cos\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx$$
$$= \frac{\mathrm{Ci}\left(\frac{bc}{d}+bx\right)\sin\left(a-\frac{bc}{d}\right)}{d} + \frac{\cos\left(a-\frac{bc}{d}\right)\mathrm{Si}\left(\frac{bc}{d}+bx\right)}{d}$$

Mathematica [**A**] time = 0.10, size = 49, normalized size = 0.96

$$\frac{\sin\left(a-\frac{bc}{d}\right)\mathrm{Ci}\left(\frac{bc}{d}+bx\right)+\cos\left(a-\frac{bc}{d}\right)\mathrm{Si}\left(\frac{bc}{d}+bx\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]/(c + d*x),x]
```

```
[Out] (CosIntegral[(b*c)/d + b*x]*Sin[a - (b*c)/d] + Cos[a - (b*c)/d]*SinIntegral
[(b*c)/d + b*x])/d
```

fricas [**A**] time = 0.85, size = 78, normalized size = 1.53

$$\frac{\left(\mathrm{Ci}\left(\frac{bdx+bc}{d}\right)+\mathrm{Ci}\left(-\frac{bdx+bc}{d}\right)\right)\sin\left(-\frac{bc-ad}{d}\right)+2\,\cos\left(-\frac{bc-ad}{d}\right)\mathrm{Si}\left(\frac{bdx+bc}{d}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c),x, algorithm="fricas")
```

```
[Out] 1/2*((cos_integral((b*d*x + b*c)/d) + cos_integral(-(b*d*x + b*c)/d))*sin(-
(b*c - a*d)/d) + 2*cos(-(b*c - a*d)/d)*sin_integral((b*d*x + b*c)/d))/d
```

giac [**C**] time = 2.99, size = 597, normalized size = 11.71

$$\Im\left(\mathrm{Ci}\left(bx+\frac{bc}{d}\right)\right)\tan\left(\frac{1}{2}\,a\right)^2\tan\left(\frac{bc}{2\,d}\right)^2-\Im\left(\mathrm{Ci}\left(-bx-\frac{bc}{d}\right)\right)\tan\left(\frac{1}{2}\,a\right)^2\tan\left(\frac{bc}{2\,d}\right)^2+2\,\mathrm{Si}\left(\frac{bdx+bc}{d}\right)\tan\left(\frac{1}{2}\,a\right)^2\tan\left(\frac{bc}{2\,d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c),x, algorithm="giac")
```

```
[Out] 1/2*(imag_part(cos_integral(b*x + b*c/d))*tan(1/2*a)^2*tan(1/2*b*c/d)^2 - i
mag_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*sin_
integral((b*d*x + b*c)/d)*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*real_part(cos_i
ntegral(b*x + b*c/d))*tan(1/2*a)^2*tan(1/2*b*c/d) + 2*real_part(cos_integra
l(-b*x - b*c/d))*tan(1/2*a)^2*tan(1/2*b*c/d) - 2*real_part(cos_integral(b*x
 + b*c/d))*tan(1/2*a)*tan(1/2*b*c/d)^2 - 2*real_part(cos_integral(-b*x - b*
c/d))*tan(1/2*a)*tan(1/2*b*c/d)^2 - imag_part(cos_integral(b*x + b*c/d))*ta
n(1/2*a)^2 + imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2 - 2*sin_int
egral((b*d*x + b*c)/d)*tan(1/2*a)^2 + 4*imag_part(cos_integral(b*x + b*c/d)
)*tan(1/2*a)*tan(1/2*b*c/d) - 4*imag_part(cos_integral(-b*x - b*c/d))*tan(1
/2*a)*tan(1/2*b*c/d) + 8*sin_integral((b*d*x + b*c)/d)*tan(1/2*a)*tan(1/2*b
*c/d) - imag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*c/d)^2 + imag_part(c
os_integral(-b*x - b*c/d))*tan(1/2*b*c/d)^2 - 2*sin_integral((b*d*x + b*c)/
d)*tan(1/2*b*c/d)^2 + 2*real_part(cos_integral(b*x + b*c/d))*tan(1/2*a) + 2
*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*a) - 2*real_part(cos_integra
l(b*x + b*c/d))*tan(1/2*b*c/d) - 2*real_part(cos_integral(-b*x - b*c/d))*ta
n(1/2*b*c/d) + imag_part(cos_integral(b*x + b*c/d)) - imag_part(cos_integra
l(-b*x - b*c/d)) + 2*sin_integral((b*d*x + b*c)/d))/(d*tan(1/2*a)^2*tan(1/2
*b*c/d)^2 + d*tan(1/2*a)^2 + d*tan(1/2*b*c/d)^2 + d)
```

maple [A] time = 0.02, size = 73, normalized size = 1.43

$$\frac{\mathrm{Si}\left(bx+a+\frac{-da+cb}{d}\right)\cos\left(\frac{-da+cb}{d}\right)}{d}-\frac{\mathrm{Ci}\left(bx+a+\frac{-da+cb}{d}\right)\sin\left(\frac{-da+cb}{d}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)/(d*x+c),x)
```

```
[Out] Si(b*x+a+(-a*d+b*c)/d)*cos((-a*d+b*c)/d)/d-Ci(b*x+a+(-a*d+b*c)/d)*sin((-a*d
+b*c)/d)/d
```

maxima [C] time = 0.45, size = 141, normalized size = 2.76

$$-\frac{b\left(iE_1\left(\frac{ibc+i(bx+a)d-iad}{d}\right)-iE_1\left(-\frac{ibc+i(bx+a)d-iad}{d}\right)\right)\cos\left(-\frac{bc-ad}{d}\right)+b\left(E_1\left(\frac{ibc+i(bx+a)d-iad}{d}\right)+E_1\left(-\frac{ibc+i(bx+a)d-iad}{d}\right.\right.}{2bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c),x, algorithm="maxima")
```

```
[Out] -1/2*(b*(I*exp_integral_e(1, (I*b*c + I*(b*x + a)*d - I*a*d)/d) - I*exp_int
egral_e(1, -(I*b*c + I*(b*x + a)*d - I*a*d)/d))*cos(-(b*c - a*d)/d) + b*(ex
p_integral_e(1, (I*b*c + I*(b*x + a)*d - I*a*d)/d) + exp_integral_e(1, -(I*
b*c + I*(b*x + a)*d - I*a*d)/d))*sin(-(b*c - a*d)/d))/(b*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sin\left(a+b\,x\right)}{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)/(c + d*x),x)
```

```
[Out] int(sin(a + b*x)/(c + d*x), x)
```

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

$$\int \frac{\sin\left(a+bx\right)}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c),x)
```

```
[Out] Integral(sin(a + b*x)/(c + d*x), x)
```

3.6 $\int \frac{\sin(a+bx)}{(c+dx)^2}\,dx$

Optimal. Leaf size=72

$$\frac{b\cos\left(a-\frac{bc}{d}\right)\text{Ci}\left(\frac{bc}{d}+bx\right)}{d^2}-\frac{b\sin\left(a-\frac{bc}{d}\right)\text{Si}\left(\frac{bc}{d}+bx\right)}{d^2}-\frac{\sin(a+bx)}{d(c+dx)}$$

```
[Out] b*Ci(b*c/d+b*x)*cos(a-b*c/d)/d^2-b*Si(b*c/d+b*x)*sin(a-b*c/d)/d^2-sin(b*x+a
)/d/(d*x+c)
```

Rubi [A] time = 0.11, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3297, 3303, 3299, 3302}

$$\frac{b\cos\left(a-\frac{bc}{d}\right)\text{CosIntegral}\left(\frac{bc}{d}+bx\right)}{d^2}-\frac{b\sin\left(a-\frac{bc}{d}\right)\text{Si}\left(\frac{bc}{d}+bx\right)}{d^2}-\frac{\sin(a+bx)}{d(c+dx)}$$

Antiderivative was successfully verified.

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

```
[Out] (b*Cos[a - (b*c)/d]*CosIntegral[(b*c)/d + b*x])/d^2 - Sin[a + b*x]/(d*(c +
d*x)) - (b*Sin[a - (b*c)/d]*SinIntegral[(b*c)/d + b*x])/d^2
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin(a+bx)}{(c+dx)^2}\,dx &= -\frac{\sin(a+bx)}{d(c+dx)}+\frac{b\int \frac{\cos(a+bx)}{c+dx}\,dx}{d}\\ &= -\frac{\sin(a+bx)}{d(c+dx)}+\frac{\left(b\cos\left(a-\frac{bc}{d}\right)\right)\int \frac{\cos\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx}{d}-\frac{\left(b\sin\left(a-\frac{bc}{d}\right)\right)\int \frac{\sin\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx}{d}\\ &= \frac{b\cos\left(a-\frac{bc}{d}\right)\operatorname{Ci}\left(\frac{bc}{d}+bx\right)}{d^2}-\frac{\sin(a+bx)}{d(c+dx)}-\frac{b\sin\left(a-\frac{bc}{d}\right)\operatorname{Si}\left(\frac{bc}{d}+bx\right)}{d^2}\end{aligned}$$

Mathematica [A] time = 0.23, size = 66, normalized size = 0.92

$$\frac{b\cos\left(a-\frac{bc}{d}\right)\operatorname{Ci}\left(b\left(\frac{c}{d}+x\right)\right)-b\sin\left(a-\frac{bc}{d}\right)\operatorname{Si}\left(b\left(\frac{c}{d}+x\right)\right)-\frac{d\sin(a+bx)}{c+dx}}{d^2}$$

Antiderivative was successfully verified.

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

```
[Out] (b*Cos[a - (b*c)/d]*CosIntegral[b*(c/d + x)] - (d*Sin[a + b*x])/(c + d*x) -
 b*Sin[a - (b*c)/d]*SinIntegral[b*(c/d + x)])/d^2
```

fricas [A] time = 0.63, size = 124, normalized size = 1.72

$$-\frac{2\,(bdx+bc)\sin\left(-\frac{bc-ad}{d}\right)\operatorname{Si}\left(\frac{bdx+bc}{d}\right)-\left((bdx+bc)\operatorname{Ci}\left(\frac{bdx+bc}{d}\right)+(bdx+bc)\operatorname{Ci}\left(-\frac{bdx+bc}{d}\right)\right)\cos\left(-\frac{bc-ad}{d}\right)+2\,d\sin(}{2\left(d^3x+cd^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(2*(b*d*x + b*c)*sin(-(b*c - a*d)/d)*sin_integral((b*d*x + b*c)/d) - (
(b*d*x + b*c)*cos_integral((b*d*x + b*c)/d) + (b*d*x + b*c)*cos_integral(-(
b*d*x + b*c)/d))*cos(-(b*c - a*d)/d) + 2*d*sin(b*x + a))/(d^3*x + c*d^2)
```

giac [B] time = 1.96, size = 521, normalized size = 7.24

$$\frac{\left((dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)b^2\cos\left(-\frac{bc-ad}{d}\right)\operatorname{Ci}\left(\frac{(dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)+bc-ad}{d}\right)+b^3c\cos\left(-\frac{bc-ad}{d}\right)\operatorname{Ci}\left(\frac{(dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)+\cdots}{d}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^2,x, algorithm="giac")
```

```
[Out] ((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c))*b^2*cos(-(b*c - a*d)/d)*cos_
integral(((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) + b
^3*c*cos(-(b*c - a*d)/d)*cos_integral(((d*x + c)*(b - b*c/(d*x + c) + a*d/(
d*x + c)) + b*c - a*d)/d) - a*b^2*d*cos(-(b*c - a*d)/d)*cos_integral(((d*x
+ c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) + (d*x + c)*(b - b
*c/(d*x + c) + a*d/(d*x + c))*b^2*sin(-(b*c - a*d)/d)*sin_integral(-((d*x +
 c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) + b^3*c*sin(-(b*c -
 a*d)/d)*sin_integral(-((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c
 - a*d)/d) - a*b^2*d*sin(-(b*c - a*d)/d)*sin_integral(-((d*x + c)*(b - b*c/
(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) + b^2*d*sin(-(d*x + c)*(b - b*c/
(d*x + c) + a*d/(d*x + c))/d))*d^2/(((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*
x + c))*d^4 + b*c*d^4 - a*d^5)*b)
```

maple [A] time = 0.02, size = 107, normalized size = 1.49

$$b\left(-\frac{\sin(bx+a)}{((bx+a)d-da+cb)d}+\frac{\frac{\operatorname{Si}\left(bx+a+\frac{-da+cb}{d}\right)\sin\left(\frac{-da+cb}{d}\right)}{d}+\frac{\operatorname{Ci}\left(bx+a+\frac{-da+cb}{d}\right)\cos\left(\frac{-da+cb}{d}\right)}{d}}{d}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)/(d*x+c)^2,x)
```

```
[Out] b*(-sin(b*x+a)/((b*x+a)*d-d*a+c*b)/d+(Si(b*x+a+(-a*d+b*c)/d)*sin((-a*d+b*c)
/d)/d+Ci(b*x+a+(-a*d+b*c)/d)*cos((-a*d+b*c)/d)/d)/d)
```

maxima [C] time = 0.52, size = 164, normalized size = 2.28

$$-\frac{b^2\left(i\,E_2\left(\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)-i\,E_2\left(-\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)\right)\cos\left(-\frac{bc-ad}{d}\right)+b^2\left(E_2\left(\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)+E_2\left(-\frac{i\,bc+i\,(bx+a)d-i\cdots}{d}\right.\right.}{2\left(bcd+(bx+a)d^2-ad^2\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(b^2*(I*exp_integral_e(2, (I*b*c + I*(b*x + a)*d - I*a*d)/d) - I*exp_i
ntegral_e(2, -(I*b*c + I*(b*x + a)*d - I*a*d)/d))*cos(-(b*c - a*d)/d) + b^2
*(exp_integral_e(2, (I*b*c + I*(b*x + a)*d - I*a*d)/d) + exp_integral_e(2,
-(I*b*c + I*(b*x + a)*d - I*a*d)/d))*sin(-(b*c - a*d)/d))/((b*c*d + (b*x +
a)*d^2 - a*d^2)*b)
```

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

$$\int \frac{\sin(a+b\,x)}{(c+d\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)/(c + d*x)^2,x)
```

```
[Out] int(sin(a + b*x)/(c + d*x)^2, x)
```

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

$$\int \frac{\sin(a+bx)}{(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)**2,x)
```

```
[Out] Integral(sin(a + b*x)/(c + d*x)**2, x)
```

3.7 $\int \frac{\sin(a+bx)}{(c+dx)^3} dx$

Optimal. Leaf size=104

$$-\frac{b^2 \sin\left(a-\frac{bc}{d}\right) \text{Ci}\left(\frac{bc}{d}+bx\right)}{2d^3}-\frac{b^2 \cos\left(a-\frac{bc}{d}\right) \text{Si}\left(\frac{bc}{d}+bx\right)}{2d^3}-\frac{b \cos(a+bx)}{2d^2(c+dx)}-\frac{\sin(a+bx)}{2d(c+dx)^2}$$

```
[Out] -1/2*b*cos(b*x+a)/d^2/(d*x+c)-1/2*b^2*cos(a-b*c/d)*Si(b*c/d+b*x)/d^3-1/2*b^
2*Ci(b*c/d+b*x)*sin(a-b*c/d)/d^3-1/2*sin(b*x+a)/d/(d*x+c)^2
```

Rubi [A] time = 0.14, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3297, 3303, 3299, 3302}

$$-\frac{b^2 \sin\left(a-\frac{bc}{d}\right) \text{CosIntegral}\left(\frac{bc}{d}+bx\right)}{2d^3}-\frac{b^2 \cos\left(a-\frac{bc}{d}\right) \text{Si}\left(\frac{bc}{d}+bx\right)}{2d^3}-\frac{b \cos(a+bx)}{2d^2(c+dx)}-\frac{\sin(a+bx)}{2d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]/(c + d*x)^3,x]
```

```
[Out] -(b*Cos[a + b*x])/(2*d^2*(c + d*x)) - (b^2*CosIntegral[(b*c)/d + b*x]*Sin[a
 - (b*c)/d])/(2*d^3) - Sin[a + b*x]/(2*d*(c + d*x)^2) - (b^2*Cos[a - (b*c)/
d]*SinIntegral[(b*c)/d + b*x])/(2*d^3)
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin(a+bx)}{(c+dx)^3}\,dx &= -\frac{\sin(a+bx)}{2d(c+dx)^2}+\frac{b\int \frac{\cos(a+bx)}{(c+dx)^2}\,dx}{2d}\\ &= -\frac{b\cos(a+bx)}{2d^2(c+dx)}-\frac{\sin(a+bx)}{2d(c+dx)^2}-\frac{b^2\int \frac{\sin(a+bx)}{c+dx}\,dx}{2d^2}\\ &= -\frac{b\cos(a+bx)}{2d^2(c+dx)}-\frac{\sin(a+bx)}{2d(c+dx)^2}-\frac{\left(b^2\cos\left(a-\frac{bc}{d}\right)\right)\int \frac{\sin\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx}{2d^2}-\frac{\left(b^2\sin\left(a-\frac{bc}{d}\right)\right)\int \frac{\cos\left(\frac{bc}{d}+\right.}{c+dx}\\ &= -\frac{b\cos(a+bx)}{2d^2(c+dx)}-\frac{b^2\text{Ci}\left(\frac{bc}{d}+bx\right)\sin\left(a-\frac{bc}{d}\right)}{2d^3}-\frac{\sin(a+bx)}{2d(c+dx)^2}-\frac{b^2\cos\left(a-\frac{bc}{d}\right)\text{Si}\left(\frac{bc}{d}+bx\right)}{2d^3}\end{aligned}$$

Mathematica [A] time = 0.73, size = 87, normalized size = 0.84

$$-\frac{b^2\sin\left(a-\frac{bc}{d}\right)\text{Ci}\left(b\left(\frac{c}{d}+x\right)\right)+b^2\cos\left(a-\frac{bc}{d}\right)\text{Si}\left(b\left(\frac{c}{d}+x\right)\right)+\frac{d(b(c+dx)\cos(a+bx)+d\sin(a+bx))}{(c+dx)^2}}{2d^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]/(c + d*x)^3,x]
```

```
[Out] -1/2*(b^2*CosIntegral[b*(c/d + x)]*Sin[a - (b*c)/d] + (d*(b*(c + d*x)*Cos[a
 + b*x] + d*Sin[a + b*x]))/(c + d*x)^2 + b^2*Cos[a - (b*c)/d]*SinIntegral[b
*(c/d + x)])/d^3
```

fricas [B] time = 0.69, size = 209, normalized size = 2.01

$$-\frac{2\,d^2\sin(bx+a)+2\left(b^2d^2x^2+2\,b^2cdx+b^2c^2\right)\cos\left(-\frac{bc-ad}{d}\right)\text{Si}\left(\frac{bdx+bc}{d}\right)+2\left(bd^2x+bcd\right)\cos(bx+a)+\left(\left(b^2d^2x^2\right.\right.}{4\left(d^5x^2+2\,cd^4x+c^2d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(2*d^2*sin(b*x + a) + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(-(b*
c - a*d)/d)*sin_integral((b*d*x + b*c)/d) + 2*(b*d^2*x + b*c*d)*cos(b*x + a
) + ((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos_integral((b*d*x + b*c)/d) +
(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos_integral(-(b*d*x + b*c)/d))*sin(-
(b*c - a*d)/d))/(d^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

giac [C] time = 1.30, size = 5727, normalized size = 55.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^3,x, algorithm="giac")
```

```
[Out] -1/4*(b^2*d^2*x^2*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1
/2*a)^2*tan(1/2*b*c/d)^2 - b^2*d^2*x^2*imag_part(cos_integral(-b*x - b*c/d)
)*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*b^2*d^2*x^2*sin_integral
((b*d*x + b*c)/d)*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*b^2*d^2*
x^2*real_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/
2*b*c/d) + 2*b^2*d^2*x^2*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)
^2*tan(1/2*a)^2*tan(1/2*b*c/d) - 2*b^2*d^2*x^2*real_part(cos_integral(b*x +
 b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d)^2 - 2*b^2*d^2*x^2*real_pa
rt(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d)^2 +
 2*b^2*c*d*x*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)
^2*tan(1/2*b*c/d)^2 - 2*b^2*c*d*x*imag_part(cos_integral(-b*x - b*c/d))*tan
(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 4*b^2*c*d*x*sin_integral((b*d*x
 + b*c)/d)*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 - b^2*d^2*x^2*imag_
part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)^2 + b^2*d^2*x^2*i
mag_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)^2 - 2*b^2*d^
2*x^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*b*x)^2*tan(1/2*a)^2 + 4*b^2*d^2
*x^2*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2
*b*c/d) - 4*b^2*d^2*x^2*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^
2*tan(1/2*a)*tan(1/2*b*c/d) + 8*b^2*d^2*x^2*sin_integral((b*d*x + b*c)/d)*t
an(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d) + 4*b^2*c*d*x*real_part(cos_integra
l(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2*b*c/d) + 4*b^2*c*d*x*re
al_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2*b*c
/d) - b^2*d^2*x^2*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1
/2*b*c/d)^2 + b^2*d^2*x^2*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x
)^2*tan(1/2*b*c/d)^2 - 2*b^2*d^2*x^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*
b*x)^2*tan(1/2*b*c/d)^2 - 4*b^2*c*d*x*real_part(cos_integral(b*x + b*c/d))*
tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d)^2 - 4*b^2*c*d*x*real_part(cos_inte
gral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d)^2 + b^2*d^2*x^
2*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*a)^2*tan(1/2*b*c/d)^2 - b^2*
d^2*x^2*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2*tan(1/2*b*c/d)^2
```

```
 + 2*b^2*d^2*x^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*a)^2*tan(1/2*b*c/d)^
2 + b^2*c^2*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)^
2*tan(1/2*b*c/d)^2 - b^2*c^2*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*
b*x)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*b^2*c^2*sin_integral((b*d*x + b*c)
/d)*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*b^2*d^2*x^2*real_part(
cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a) + 2*b^2*d^2*x^2*real_p
art(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*a) - 2*b^2*c*d*x*ima
g_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)^2 + 2*b^2*c*d*x
*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)^2 - 4*b^2*
c*d*x*sin_integral((b*d*x + b*c)/d)*tan(1/2*b*x)^2*tan(1/2*a)^2 - 2*b^2*d^2
*x^2*real_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*b*c/d) - 2
*b^2*d^2*x^2*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*b
*c/d) + 8*b^2*c*d*x*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan
(1/2*a)*tan(1/2*b*c/d) - 8*b^2*c*d*x*imag_part(cos_integral(-b*x - b*c/d))*
tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d) + 16*b^2*c*d*x*sin_integral((b*d*x
 + b*c)/d)*tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d) + 2*b^2*d^2*x^2*real_pa
rt(cos_integral(b*x + b*c/d))*tan(1/2*a)^2*tan(1/2*b*c/d) + 2*b^2*d^2*x^2*r
eal_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2*tan(1/2*b*c/d) + 2*b^2*c^
2*real_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2*
b*c/d) + 2*b^2*c^2*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan
(1/2*a)^2*tan(1/2*b*c/d) - 2*b^2*c*d*x*imag_part(cos_integral(b*x + b*c/d))
*tan(1/2*b*x)^2*tan(1/2*b*c/d)^2 + 2*b^2*c*d*x*imag_part(cos_integral(-b*x
- b*c/d))*tan(1/2*b*x)^2*tan(1/2*b*c/d)^2 - 4*b^2*c*d*x*sin_integral((b*d*x
 + b*c)/d)*tan(1/2*b*x)^2*tan(1/2*b*c/d)^2 - 2*b^2*d^2*x^2*real_part(cos_in
tegral(b*x + b*c/d))*tan(1/2*a)*tan(1/2*b*c/d)^2 - 2*b^2*d^2*x^2*real_part(
cos_integral(-b*x - b*c/d))*tan(1/2*a)*tan(1/2*b*c/d)^2 - 2*b^2*c^2*real_pa
rt(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d)^2 -
2*b^2*c^2*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)*t
an(1/2*b*c/d)^2 + 2*b^2*c*d*x*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*
a)^2*tan(1/2*b*c/d)^2 - 2*b^2*c*d*x*imag_part(cos_integral(-b*x - b*c/d))*t
an(1/2*a)^2*tan(1/2*b*c/d)^2 + 4*b^2*c*d*x*sin_integral((b*d*x + b*c)/d)*ta
n(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*b*d^2*x*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2
*b*c/d)^2 + b^2*d^2*x^2*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2
 - b^2*d^2*x^2*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2 + 2*b^2
*d^2*x^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*b*x)^2 + 4*b^2*c*d*x*real_pa
rt(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a) + 4*b^2*c*d*x*real_
part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*a) - b^2*d^2*x^2*im
ag_part(cos_integral(b*x + b*c/d))*tan(1/2*a)^2 + b^2*d^2*x^2*imag_part(cos
_integral(-b*x - b*c/d))*tan(1/2*a)^2 - 2*b^2*d^2*x^2*sin_integral((b*d*x +
 b*c)/d)*tan(1/2*a)^2 - b^2*c^2*imag_part(cos_integral(b*x + b*c/d))*tan(1/
2*b*x)^2*tan(1/2*a)^2 + b^2*c^2*imag_part(cos_integral(-b*x - b*c/d))*tan(1
/2*b*x)^2*tan(1/2*a)^2 - 2*b^2*c^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*b*
x)^2*tan(1/2*a)^2 - 4*b^2*c*d*x*real_part(cos_integral(b*x + b*c/d))*tan(1/
2*b*x)^2*tan(1/2*b*c/d) - 4*b^2*c*d*x*real_part(cos_integral(-b*x - b*c/d))
*tan(1/2*b*x)^2*tan(1/2*b*c/d) + 4*b^2*d^2*x^2*imag_part(cos_integral(b*x +
```

```
 b*c/d))*tan(1/2*a)*tan(1/2*b*c/d) - 4*b^2*d^2*x^2*imag_part(cos_integral(-
b*x - b*c/d))*tan(1/2*a)*tan(1/2*b*c/d) + 8*b^2*d^2*x^2*sin_integral((b*d*x
 + b*c)/d)*tan(1/2*a)*tan(1/2*b*c/d) + 4*b^2*c^2*imag_part(cos_integral(b*x
 + b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d) - 4*b^2*c^2*imag_part(c
os_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d) + 8*b^2
*c^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d)
 + 4*b^2*c*d*x*real_part(cos_integral(b*x + b*c/d))*tan(1/2*a)^2*tan(1/2*b*
c/d) + 4*b^2*c*d*x*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2*tan(1
/2*b*c/d) - b^2*d^2*x^2*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*c/d)
^2 + b^2*d^2*x^2*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*c/d)^2 - 2
*b^2*d^2*x^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*b*c/d)^2 - b^2*c^2*imag_
part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*b*c/d)^2 + b^2*c^2*i
mag_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*b*c/d)^2 - 2*b^
2*c^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*b*x)^2*tan(1/2*b*c/d)^2 - 4*b^2
*c*d*x*real_part(cos_integral(b*x + b*c/d))*tan(1/2*a)*tan(1/2*b*c/d)^2 - 4
*b^2*c*d*x*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)*tan(1/2*b*c/d)^
2 + b^2*c^2*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*a)^2*tan(1/2*b*c/d
)^2 - b^2*c^2*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2*tan(1/2*b*
c/d)^2 + 2*b^2*c^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*a)^2*tan(1/2*b*c/d
)^2 + 2*b*c*d*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*b^2*c*d*x*im
ag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2 - 2*b^2*c*d*x*imag_part(c
os_integral(-b*x - b*c/d))*tan(1/2*b*x)^2 + 4*b^2*c*d*x*sin_integral((b*d*x
 + b*c)/d)*tan(1/2*b*x)^2 + 2*b^2*d^2*x^2*real_part(cos_integral(b*x + b*c/
d))*tan(1/2*a) + 2*b^2*d^2*x^2*real_part(cos_integral(-b*x - b*c/d))*tan(1/
2*a) + 2*b^2*c^2*real_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/
2*a) + 2*b^2*c^2*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1
/2*a) - 2*b^2*c*d*x*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*a)^2 + 2*b
^2*c*d*x*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2 - 4*b^2*c*d*x*s
in_integral((b*d*x + b*c)/d)*tan(1/2*a)^2 + 2*b*d^2*x*tan(1/2*b*x)^2*tan(1/
2*a)^2 - 2*b^2*d^2*x^2*real_part(cos_integral(b*x + b*c/d))*tan(1/2*b*c/d)
 - 2*b^2*d^2*x^2*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*c/d) - 2*b^
2*c^2*real_part(cos_integral(b*x + b*c/d))*tan(1/2*b*x)^2*tan(1/2*b*c/d) -
2*b^2*c^2*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*x)^2*tan(1/2*b*c/
d) + 8*b^2*c*d*x*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*a)*tan(1/2*b*
c/d) - 8*b^2*c*d*x*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)*tan(1/2
*b*c/d) + 16*b^2*c*d*x*sin_integral((b*d*x + b*c)/d)*tan(1/2*a)*tan(1/2*b*c
/d) + 2*b^2*c^2*real_part(cos_integral(b*x + b*c/d))*tan(1/2*a)^2*tan(1/2*b
*c/d) + 2*b^2*c^2*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2*tan(1/
2*b*c/d) - 2*b^2*c*d*x*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*b*c/d)^
2 + 2*b^2*c*d*x*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*c/d)^2 - 4*
b^2*c*d*x*sin_integral((b*d*x + b*c)/d)*tan(1/2*b*c/d)^2 - 2*b*d^2*x*tan(1/
2*b*x)^2*tan(1/2*b*c/d)^2 - 2*b^2*c^2*real_part(cos_integral(b*x + b*c/d))*
tan(1/2*a)*tan(1/2*b*c/d)^2 - 2*b^2*c^2*real_part(cos_integral(-b*x - b*c/d
))*tan(1/2*a)*tan(1/2*b*c/d)^2 - 8*b*d^2*x*tan(1/2*b*x)*tan(1/2*a)*tan(1/2*
b*c/d)^2 - 2*b*d^2*x*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + b^2*d^2*x^2*imag_part(
```

```
cos_integral(b*x + b*c/d)) - b^2*d^2*x^2*imag_part(cos_integral(-b*x - b*c/
d)) + 2*b^2*d^2*x^2*sin_integral((b*d*x + b*c)/d) + b^2*c^2*imag_part(cos_i
ntegral(b*x + b*c/d))*tan(1/2*b*x)^2 - b^2*c^2*imag_part(cos_integral(-b*x
- b*c/d))*tan(1/2*b*x)^2 + 2*b^2*c^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*
b*x)^2 + 4*b^2*c*d*x*real_part(cos_integral(b*x + b*c/d))*tan(1/2*a) + 4*b^
2*c*d*x*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*a) - b^2*c^2*imag_par
t(cos_integral(b*x + b*c/d))*tan(1/2*a)^2 + b^2*c^2*imag_part(cos_integral(
-b*x - b*c/d))*tan(1/2*a)^2 - 2*b^2*c^2*sin_integral((b*d*x + b*c)/d)*tan(1
/2*a)^2 + 2*b*c*d*tan(1/2*b*x)^2*tan(1/2*a)^2 - 4*b^2*c*d*x*real_part(cos_i
ntegral(b*x + b*c/d))*tan(1/2*b*c/d) - 4*b^2*c*d*x*real_part(cos_integral(-
b*x - b*c/d))*tan(1/2*b*c/d) + 4*b^2*c^2*imag_part(cos_integral(b*x + b*c/d
))*tan(1/2*a)*tan(1/2*b*c/d) - 4*b^2*c^2*imag_part(cos_integral(-b*x - b*c/
d))*tan(1/2*a)*tan(1/2*b*c/d) + 8*b^2*c^2*sin_integral((b*d*x + b*c)/d)*tan
(1/2*a)*tan(1/2*b*c/d) - b^2*c^2*imag_part(cos_integral(b*x + b*c/d))*tan(1
/2*b*c/d)^2 + b^2*c^2*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*c/d)^
2 - 2*b^2*c^2*sin_integral((b*d*x + b*c)/d)*tan(1/2*b*c/d)^2 - 2*b*c*d*tan(
1/2*b*x)^2*tan(1/2*b*c/d)^2 - 8*b*c*d*tan(1/2*b*x)*tan(1/2*a)*tan(1/2*b*c/d
)^2 - 4*d^2*tan(1/2*b*x)^2*tan(1/2*a)*tan(1/2*b*c/d)^2 - 2*b*c*d*tan(1/2*a)
^2*tan(1/2*b*c/d)^2 - 4*d^2*tan(1/2*b*x)*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*
b^2*c*d*x*imag_part(cos_integral(b*x + b*c/d)) - 2*b^2*c*d*x*imag_part(cos_
integral(-b*x - b*c/d)) + 4*b^2*c*d*x*sin_integral((b*d*x + b*c)/d) - 2*b*d
^2*x*tan(1/2*b*x)^2 + 2*b^2*c^2*real_part(cos_integral(b*x + b*c/d))*tan(1/
2*a) + 2*b^2*c^2*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*a) - 8*b*d^2
*x*tan(1/2*b*x)*tan(1/2*a) - 2*b*d^2*x*tan(1/2*a)^2 - 2*b^2*c^2*real_part(c
os_integral(b*x + b*c/d))*tan(1/2*b*c/d) - 2*b^2*c^2*real_part(cos_integral
(-b*x - b*c/d))*tan(1/2*b*c/d) + 2*b*d^2*x*tan(1/2*b*c/d)^2 + b^2*c^2*imag_
part(cos_integral(b*x + b*c/d)) - b^2*c^2*imag_part(cos_integral(-b*x - b*c
/d)) + 2*b^2*c^2*sin_integral((b*d*x + b*c)/d) - 2*b*c*d*tan(1/2*b*x)^2 - 8
*b*c*d*tan(1/2*b*x)*tan(1/2*a) - 4*d^2*tan(1/2*b*x)^2*tan(1/2*a) - 2*b*c*d*
tan(1/2*a)^2 - 4*d^2*tan(1/2*b*x)*tan(1/2*a)^2 + 2*b*c*d*tan(1/2*b*c/d)^2 +
 4*d^2*tan(1/2*b*x)*tan(1/2*b*c/d)^2 + 4*d^2*tan(1/2*a)*tan(1/2*b*c/d)^2 +
2*b*d^2*x + 2*b*c*d + 4*d^2*tan(1/2*b*x) + 4*d^2*tan(1/2*a))/(d^5*x^2*tan(1
/2*b*x)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*c*d^4*x*tan(1/2*b*x)^2*tan(1/2*
a)^2*tan(1/2*b*c/d)^2 + d^5*x^2*tan(1/2*b*x)^2*tan(1/2*a)^2 + d^5*x^2*tan(1
/2*b*x)^2*tan(1/2*b*c/d)^2 + d^5*x^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + c^2*d^
3*tan(1/2*b*x)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*c*d^4*x*tan(1/2*b*x)^2*t
an(1/2*a)^2 + 2*c*d^4*x*tan(1/2*b*x)^2*tan(1/2*b*c/d)^2 + 2*c*d^4*x*tan(1/2
*a)^2*tan(1/2*b*c/d)^2 + d^5*x^2*tan(1/2*b*x)^2 + d^5*x^2*tan(1/2*a)^2 + c^
2*d^3*tan(1/2*b*x)^2*tan(1/2*a)^2 + d^5*x^2*tan(1/2*b*c/d)^2 + c^2*d^3*tan(
1/2*b*x)^2*tan(1/2*b*c/d)^2 + c^2*d^3*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*c*d
^4*x*tan(1/2*b*x)^2 + 2*c*d^4*x*tan(1/2*a)^2 + 2*c*d^4*x*tan(1/2*b*c/d)^2 +
 d^5*x^2 + c^2*d^3*tan(1/2*b*x)^2 + c^2*d^3*tan(1/2*a)^2 + c^2*d^3*tan(1/2*
b*c/d)^2 + 2*c*d^4*x + c^2*d^3)
```

maple [A] time = 0.02, size = 145, normalized size = 1.39

$$b^{2}\left(-\frac{\sin\left(bx+a\right)}{2\left(\left(bx+a\right)d-da+cb\right)^{2}d}+\frac{-\frac{\cos(bx+a)}{((bx+a)d-da+cb)d}-\frac{\frac{\mathrm{Si}\left(bx+a+\frac{-da+cb}{d}\right)\cos\left(\frac{-da+cb}{d}\right)}{d}-\frac{\mathrm{Ci}\left(bx+a+\frac{-da+cb}{d}\right)\sin\left(\frac{-da+cb}{d}\right)}{d}}{d}}{2d}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)/(d*x+c)^3,x)
```

```
[Out] b^2*(-1/2*sin(b*x+a)/((b*x+a)*d-d*a+c*b)^2/d+1/2*(-cos(b*x+a)/((b*x+a)*d-d*
a+c*b)/d-(Si(b*x+a+(-a*d+b*c)/d)*cos((-a*d+b*c)/d)/d-Ci(b*x+a+(-a*d+b*c)/d)
*sin((-a*d+b*c)/d)/d)/d)/d)
```

maxima [C] time = 0.62, size = 199, normalized size = 1.91

$$-\frac{b^{3}\left(i\,E_{3}\left(\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)-i\,E_{3}\left(-\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)\right)\cos\left(-\frac{bc-ad}{d}\right)+b^{3}\left(E_{3}\left(\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)+E_{3}\left(-\frac{i\,bc+i\,(bx+a)d-i}{d}\right.\right.}{2\left(b^{2}c^{2}d-2\,abcd^{2}+(bx+a)^{2}d^{3}+a^{2}d^{3}+2\left(bcd^{2}-ad^{3}\right)(bx+a)\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b^3*(I*exp_integral_e(3, (I*b*c + I*(b*x + a)*d - I*a*d)/d) - I*exp_i
ntegral_e(3, -(I*b*c + I*(b*x + a)*d - I*a*d)/d))*cos(-(b*c - a*d)/d) + b^3
*(exp_integral_e(3, (I*b*c + I*(b*x + a)*d - I*a*d)/d) + exp_integral_e(3,
-(I*b*c + I*(b*x + a)*d - I*a*d)/d))*sin(-(b*c - a*d)/d))/((b^2*c^2*d - 2*a
*b*c*d^2 + (b*x + a)^2*d^3 + a^2*d^3 + 2*(b*c*d^2 - a*d^3)*(b*x + a))*b)
```

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

$$\int \frac{\sin\left(a+b\,x\right)}{{\left(c+d\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)/(c + d*x)^3,x)
```

```
[Out] int(sin(a + b*x)/(c + d*x)^3, x)
```

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

$$\int \frac{\sin\left(a+bx\right)}{\left(c+dx\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)**3,x)
```

```
[Out] Integral(sin(a + b*x)/(c + d*x)**3, x)
```

3.8 $\int (c+dx)^4 \sin^2(a+bx)\,dx$

Optimal. Leaf size=161

$$-\frac{3d^4\sin(a+bx)\cos(a+bx)}{4b^5}-\frac{3d^3(c+dx)\sin^2(a+bx)}{2b^4}+\frac{3d^2(c+dx)^2\sin(a+bx)\cos(a+bx)}{2b^3}+\frac{d(c+dx)^3\sin^2(}{b^2}$$

```
[Out] 3/4*d^4*x/b^4-1/2*d*(d*x+c)^3/b^2+1/10*(d*x+c)^5/d-3/4*d^4*cos(b*x+a)*sin(b
*x+a)/b^5+3/2*d^2*(d*x+c)^2*cos(b*x+a)*sin(b*x+a)/b^3-1/2*(d*x+c)^4*cos(b*x
+a)*sin(b*x+a)/b-3/2*d^3*(d*x+c)*sin(b*x+a)^2/b^4+d*(d*x+c)^3*sin(b*x+a)^2/
b^2
```

Rubi [A] time = 0.10, antiderivative size = 161, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3311, 32, 2635, 8}

$$-\frac{3d^3(c+dx)\sin^2(a+bx)}{2b^4}+\frac{3d^2(c+dx)^2\sin(a+bx)\cos(a+bx)}{2b^3}+\frac{d(c+dx)^3\sin^2(a+bx)}{b^2}-\frac{3d^4\sin(a+bx)\cos(}{4b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^4*Sin[a + b*x]^2,x]
```

```
[Out] (3*d^4*x)/(4*b^4) - (d*(c + d*x)^3)/(2*b^2) + (c + d*x)^5/(10*d) - (3*d^4*C
os[a + b*x]*Sin[a + b*x])/(4*b^5) + (3*d^2*(c + d*x)^2*Cos[a + b*x]*Sin[a +
 b*x])/(2*b^3) - ((c + d*x)^4*Cos[a + b*x]*Sin[a + b*x])/(2*b) - (3*d^3*(c
+ d*x)*Sin[a + b*x]^2)/(2*b^4) + (d*(c + d*x)^3*Sin[a + b*x]^2)/b^2
```

Rule 8

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

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2635

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

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rubi steps

$$\int (c+dx)^4 \sin^2(a+bx)\,dx = -\frac{(c+dx)^4\cos(a+bx)\sin(a+bx)}{2b} + \frac{d(c+dx)^3\sin^2(a+bx)}{b^2} + \frac{1}{2}\int (c+dx)^4\,dx -$$

$$= \frac{(c+dx)^5}{10d} + \frac{3d^2(c+dx)^2\cos(a+bx)\sin(a+bx)}{2b^3} - \frac{(c+dx)^4\cos(a+bx)\sin(a+b}{2b}$$

$$= -\frac{d(c+dx)^3}{2b^2} + \frac{(c+dx)^5}{10d} - \frac{3d^4\cos(a+bx)\sin(a+bx)}{4b^5} + \frac{3d^2(c+dx)^2\cos(a+bx)}{2b^3}$$

$$= \frac{3d^4x}{4b^4} - \frac{d(c+dx)^3}{2b^2} + \frac{(c+dx)^5}{10d} - \frac{3d^4\cos(a+bx)\sin(a+bx)}{4b^5} + \frac{3d^2(c+dx)^2\cos(a}{2b}$$

Mathematica [A] time = 0.68, size = 132, normalized size = 0.82

$$\frac{-20bd(c+dx)\cos(2(a+bx))\left(2b^2(c+dx)^2-3d^2\right)-10\sin(2(a+bx))\left(2b^4(c+dx)^4-6b^2d^2(c+dx)^2+3d^4\right)+8b}{80b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^4*Sin[a + b*x]^2,x]
```

```
[Out] (8*b^5*x*(5*c^4 + 10*c^3*d*x + 10*c^2*d^2*x^2 + 5*c*d^3*x^3 + d^4*x^4) - 20
*b*d*(c + d*x)*(-3*d^2 + 2*b^2*(c + d*x)^2)*Cos[2*(a + b*x)] - 10*(3*d^4 -
6*b^2*d^2*(c + d*x)^2 + 2*b^4*(c + d*x)^4)*Sin[2*(a + b*x)])/(80*b^5)
```

fricas [A] time = 0.65, size = 286, normalized size = 1.78

$$\frac{2\,b^5d^4x^5+10\,b^5cd^3x^4+10\left(2\,b^5c^2d^2+b^3d^4\right)x^3+10\left(2\,b^5c^3d+3\,b^3cd^3\right)x^2-10\left(2\,b^3d^4x^3+6\,b^3cd^3x^2+2\,b^3c^3d-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^4*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/20*(2*b^5*d^4*x^5 + 10*b^5*c*d^3*x^4 + 10*(2*b^5*c^2*d^2 + b^3*d^4)*x^3 +
 10*(2*b^5*c^3*d + 3*b^3*c*d^3)*x^2 - 10*(2*b^3*d^4*x^3 + 6*b^3*c*d^3*x^2 +
```

```
2*b^3*c^3*d - 3*b*c*d^3 + 3*(2*b^3*c^2*d^2 - b*d^4)*x)*cos(b*x + a)^2 - 5*
(2*b^4*d^4*x^4 + 8*b^4*c*d^3*x^3 + 2*b^4*c^4 - 6*b^2*c^2*d^2 + 3*d^4 + 6*(2
*b^4*c^2*d^2 - b^2*d^4)*x^2 + 4*(2*b^4*c^3*d - 3*b^2*c*d^3)*x)*cos(b*x + a)
*sin(b*x + a) + 5*(2*b^5*c^4 + 6*b^3*c^2*d^2 - 3*b*d^4)*x)/b^5
```

giac [A] time = 0.37, size = 222, normalized size = 1.38

$$\frac{1}{10}\,d^4x^5+\frac{1}{2}\,cd^3x^4+c^2d^2x^3+c^3dx^2+\frac{1}{2}\,c^4x-\frac{\left(2\,b^3d^4x^3+6\,b^3cd^3x^2+6\,b^3c^2d^2x+2\,b^3c^3d-3\,bd^4x-3\,bcd^3\right)\cos\left(2\,b\right.}{4\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^4*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/10*d^4*x^5 + 1/2*c*d^3*x^4 + c^2*d^2*x^3 + c^3*d*x^2 + 1/2*c^4*x - 1/4*(2
*b^3*d^4*x^3 + 6*b^3*c*d^3*x^2 + 6*b^3*c^2*d^2*x + 2*b^3*c^3*d - 3*b*d^4*x
- 3*b*c*d^3)*cos(2*b*x + 2*a)/b^5 - 1/8*(2*b^4*d^4*x^4 + 8*b^4*c*d^3*x^3 +
12*b^4*c^2*d^2*x^2 + 8*b^4*c^3*d*x + 2*b^4*c^4 - 6*b^2*d^4*x^2 - 12*b^2*c*d
^3*x - 6*b^2*c^2*d^2 + 3*d^4)*sin(2*b*x + 2*a)/b^5
```

maple [B] time = 0.09, size = 1030, normalized size = 6.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^4*sin(b*x+a)^2,x)
```

```
[Out] 1/b*(1/b^4*d^4*((b*x+a)^4*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-(b*x+a
)^3*cos(b*x+a)^2+3*(b*x+a)^2*(1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)+3/2*
(b*x+a)*cos(b*x+a)^2-3/4*cos(b*x+a)*sin(b*x+a)-3/4*b*x-3/4*a-(b*x+a)^3-2/5*
(b*x+a)^5)-4/b^4*a*d^4*((b*x+a)^3*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a
)-3/4*(b*x+a)^2*cos(b*x+a)^2+3/2*(b*x+a)*(1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x
+1/2*a)-3/8*(b*x+a)^2-3/8*sin(b*x+a)^2-3/8*(b*x+a)^4)+4/b^3*c*d^3*((b*x+a)^
3*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-3/4*(b*x+a)^2*cos(b*x+a)^2+3/2
*(b*x+a)*(1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-3/8*(b*x+a)^2-3/8*sin(b*
x+a)^2-3/8*(b*x+a)^4)+6/b^4*a^2*d^4*((b*x+a)^2*(-1/2*cos(b*x+a)*sin(b*x+a)+
1/2*b*x+1/2*a)-1/2*(b*x+a)*cos(b*x+a)^2+1/4*cos(b*x+a)*sin(b*x+a)+1/4*b*x+1
/4*a-1/3*(b*x+a)^3)-12/b^3*a*c*d^3*((b*x+a)^2*(-1/2*cos(b*x+a)*sin(b*x+a)+1
/2*b*x+1/2*a)-1/2*(b*x+a)*cos(b*x+a)^2+1/4*cos(b*x+a)*sin(b*x+a)+1/4*b*x+1/
4*a-1/3*(b*x+a)^3)+6/b^2*c^2*d^2*((b*x+a)^2*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2
*b*x+1/2*a)-1/2*(b*x+a)*cos(b*x+a)^2+1/4*cos(b*x+a)*sin(b*x+a)+1/4*b*x+1/4*
a-1/3*(b*x+a)^3)-4/b^4*a^3*d^4*((b*x+a)*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x
+1/2*a)-1/4*(b*x+a)^2+1/4*sin(b*x+a)^2)+12/b^3*a^2*c*d^3*((b*x+a)*(-1/2*cos
(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-1/4*(b*x+a)^2+1/4*sin(b*x+a)^2)-12/b^2*a*
c^2*d^2*((b*x+a)*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-1/4*(b*x+a)^2+1
```

```
/4*sin(b*x+a)^2)+4/b*c^3*d*((b*x+a)*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2
*a)-1/4*(b*x+a)^2+1/4*sin(b*x+a)^2)+1/b^4*a^4*d^4*(-1/2*cos(b*x+a)*sin(b*x+
a)+1/2*b*x+1/2*a)-4/b^3*a^3*c*d^3*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a
)+6/b^2*a^2*c^2*d^2*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-4/b*a*c^3*d*
(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)+c^4*(-1/2*cos(b*x+a)*sin(b*x+a)+
1/2*b*x+1/2*a))
```

maxima [B] time = 0.46, size = 735, normalized size = 4.57

$$\frac{10\,(2\,bx+2\,a-\sin\left(2\,bx+2\,a\right))c^4-\frac{40\,(2\,bx+2\,a-\sin(2\,bx+2\,a))ac^3d}{b}+\frac{60\,(2\,bx+2\,a-\sin(2\,bx+2\,a))a^2c^2d^2}{b^2}-\frac{40\,(2\,bx+2\,a-\sin(2\,bx+2\,a)}{b^3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^4*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/40*(10*(2*b*x + 2*a - sin(2*b*x + 2*a))*c^4 - 40*(2*b*x + 2*a - sin(2*b*x
 + 2*a))*a*c^3*d/b + 60*(2*b*x + 2*a - sin(2*b*x + 2*a))*a^2*c^2*d^2/b^2 -
40*(2*b*x + 2*a - sin(2*b*x + 2*a))*a^3*c*d^3/b^3 + 10*(2*b*x + 2*a - sin(2
*b*x + 2*a))*a^4*d^4/b^4 + 20*(2*(b*x + a)^2 - 2*(b*x + a)*sin(2*b*x + 2*a)
 - cos(2*b*x + 2*a))*c^3*d/b - 60*(2*(b*x + a)^2 - 2*(b*x + a)*sin(2*b*x +
2*a) - cos(2*b*x + 2*a))*a*c^2*d^2/b^2 + 60*(2*(b*x + a)^2 - 2*(b*x + a)*si
n(2*b*x + 2*a) - cos(2*b*x + 2*a))*a^2*c*d^3/b^3 - 20*(2*(b*x + a)^2 - 2*(b
*x + a)*sin(2*b*x + 2*a) - cos(2*b*x + 2*a))*a^3*d^4/b^4 + 10*(4*(b*x + a)^
3 - 6*(b*x + a)*cos(2*b*x + 2*a) - 3*(2*(b*x + a)^2 - 1)*sin(2*b*x + 2*a))*
c^2*d^2/b^2 - 20*(4*(b*x + a)^3 - 6*(b*x + a)*cos(2*b*x + 2*a) - 3*(2*(b*x
+ a)^2 - 1)*sin(2*b*x + 2*a))*a*c*d^3/b^3 + 10*(4*(b*x + a)^3 - 6*(b*x + a)
*cos(2*b*x + 2*a) - 3*(2*(b*x + a)^2 - 1)*sin(2*b*x + 2*a))*a^2*d^4/b^4 + 1
0*(2*(b*x + a)^4 - 3*(2*(b*x + a)^2 - 1)*cos(2*b*x + 2*a) - 2*(2*(b*x + a)^
3 - 3*b*x - 3*a)*sin(2*b*x + 2*a))*c*d^3/b^3 - 10*(2*(b*x + a)^4 - 3*(2*(b*
x + a)^2 - 1)*cos(2*b*x + 2*a) - 2*(2*(b*x + a)^3 - 3*b*x - 3*a)*sin(2*b*x
+ 2*a))*a*d^4/b^4 + (4*(b*x + a)^5 - 10*(2*(b*x + a)^3 - 3*b*x - 3*a)*cos(2
*b*x + 2*a) - 5*(2*(b*x + a)^4 - 6*(b*x + a)^2 + 3)*sin(2*b*x + 2*a))*d^4/b
^4)/b
```

mupad [B] time = 1.09, size = 349, normalized size = 2.17

$$-\frac{\frac{15\,d^4\,\sin(2\,a+2\,b\,x)}{2}-10\,b^5\,c^4\,x+5\,b^4\,c^4\,\sin\left(2\,a+2\,b\,x\right)-2\,b^5\,d^4\,x^5+10\,b^3\,c^3\,d\,\cos\left(2\,a+2\,b\,x\right)-20\,b^5\,c^3\,d\,x^2-10}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(c + d*x)^4,x)
```

```
[Out] -((15*d^4*sin(2*a + 2*b*x))/2 - 10*b^5*c^4*x + 5*b^4*c^4*sin(2*a + 2*b*x) -
 2*b^5*d^4*x^5 + 10*b^3*c^3*d*cos(2*a + 2*b*x) - 20*b^5*c^3*d*x^2 - 10*b^5*
```

```
c*d^3*x^4 - 15*b^2*c^2*d^2*sin(2*a + 2*b*x) + 10*b^3*d^4*x^3*cos(2*a + 2*b*
x) - 20*b^5*c^2*d^2*x^3 - 15*b^2*d^4*x^2*sin(2*a + 2*b*x) + 5*b^4*d^4*x^4*s
in(2*a + 2*b*x) - 15*b*c*d^3*cos(2*a + 2*b*x) - 15*b*d^4*x*cos(2*a + 2*b*x)
 + 30*b^4*c^2*d^2*x^2*sin(2*a + 2*b*x) - 30*b^2*c*d^3*x*sin(2*a + 2*b*x) +
20*b^4*c^3*d*x*sin(2*a + 2*b*x) + 30*b^3*c^2*d^2*x*cos(2*a + 2*b*x) + 30*b^
3*c*d^3*x^2*cos(2*a + 2*b*x) + 20*b^4*c*d^3*x^3*sin(2*a + 2*b*x))/(20*b^5)
```

sympy [A] time = 6.33, size = 660, normalized size = 4.10

$$\begin{cases} \frac{c^4x\sin^2(a+bx)}{2} + \frac{c^4x\cos^2(a+bx)}{2} + c^3dx^2\sin^2(a+bx) + c^3dx^2\cos^2(a+bx) + c^2d^2x^3\sin^2(a+bx) + c^2d^2x^3\cos^2(a + \\ \left(c^4x + 2c^3dx^2 + 2c^2d^2x^3 + cd^3x^4 + \frac{d^4x^5}{5}\right)\sin^2(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**4*sin(b*x+a)**2,x)
```

```
[Out] Piecewise((c**4*x*sin(a + b*x)**2/2 + c**4*x*cos(a + b*x)**2/2 + c**3*d*x**
2*sin(a + b*x)**2 + c**3*d*x**2*cos(a + b*x)**2 + c**2*d**2*x**3*sin(a + b*
x)**2 + c**2*d**2*x**3*cos(a + b*x)**2 + c*d**3*x**4*sin(a + b*x)**2/2 + c*
d**3*x**4*cos(a + b*x)**2/2 + d**4*x**5*sin(a + b*x)**2/10 + d**4*x**5*cos(
a + b*x)**2/10 - c**4*sin(a + b*x)*cos(a + b*x)/(2*b) - 2*c**3*d*x*sin(a +
b*x)*cos(a + b*x)/b - 3*c**2*d**2*x**2*sin(a + b*x)*cos(a + b*x)/b - 2*c*d*
*3*x**3*sin(a + b*x)*cos(a + b*x)/b - d**4*x**4*sin(a + b*x)*cos(a + b*x)/(
2*b) - c**3*d*cos(a + b*x)**2/b**2 + 3*c**2*d**2*x*sin(a + b*x)**2/(2*b**2)
 - 3*c**2*d**2*x*cos(a + b*x)**2/(2*b**2) + 3*c*d**3*x**2*sin(a + b*x)**2/(
2*b**2) - 3*c*d**3*x**2*cos(a + b*x)**2/(2*b**2) + d**4*x**3*sin(a + b*x)**
2/(2*b**2) - d**4*x**3*cos(a + b*x)**2/(2*b**2) + 3*c**2*d**2*sin(a + b*x)*
cos(a + b*x)/(2*b**3) + 3*c*d**3*x*sin(a + b*x)*cos(a + b*x)/b**3 + 3*d**4*
x**2*sin(a + b*x)*cos(a + b*x)/(2*b**3) + 3*c*d**3*cos(a + b*x)**2/(2*b**4)
 - 3*d**4*x*sin(a + b*x)**2/(4*b**4) + 3*d**4*x*cos(a + b*x)**2/(4*b**4) -
3*d**4*sin(a + b*x)*cos(a + b*x)/(4*b**5), Ne(b, 0)), ((c**4*x + 2*c**3*d*x
**2 + 2*c**2*d**2*x**3 + c*d**3*x**4 + d**4*x**5/5)*sin(a)**2, True))
```

3.9 $\int (c+dx)^3 \sin^2(a+bx)\,dx$

Optimal. Leaf size=134

$$-\frac{3d^3\sin^2(a+bx)}{8b^4}+\frac{3d^2(c+dx)\sin(a+bx)\cos(a+bx)}{4b^3}+\frac{3d(c+dx)^2\sin^2(a+bx)}{4b^2}-\frac{(c+dx)^3\sin(a+bx)\cos(a+}{2b}$$

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

Rubi [A] time = 0.07, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {3311, 32, 3310}

$$\frac{3d^2(c+dx)\sin(a+bx)\cos(a+bx)}{4b^3}+\frac{3d(c+dx)^2\sin^2(a+bx)}{4b^2}-\frac{3d^3\sin^2(a+bx)}{8b^4}-\frac{(c+dx)^3\sin(a+bx)\cos(a+bx}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*Sin[a + b*x]^2,x]
```

```
[Out] (-3*c*d^2*x)/(4*b^2) - (3*d^3*x^2)/(8*b^2) + (c + d*x)^4/(8*d) + (3*d^2*(c
+ d*x)*Cos[a + b*x]*Sin[a + b*x])/(4*b^3) - ((c + d*x)^3*Cos[a + b*x]*Sin[a
 + b*x])/(2*b) - (3*d^3*Sin[a + b*x]^2)/(8*b^4) + (3*d*(c + d*x)^2*Sin[a +
b*x]^2)/(4*b^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 3310

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

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
```

```
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rubi steps

$$\int (c+dx)^3\sin^2(a+bx)\,dx = -\frac{(c+dx)^3\cos(a+bx)\sin(a+bx)}{2b}+\frac{3d(c+dx)^2\sin^2(a+bx)}{4b^2}+\frac{1}{2}\int (c+dx)^3\,dx$$

$$=\frac{(c+dx)^4}{8d}+\frac{3d^2(c+dx)\cos(a+bx)\sin(a+bx)}{4b^3}-\frac{(c+dx)^3\cos(a+bx)\sin(a+b}{2b}$$

$$=-\frac{3cd^2x}{4b^2}-\frac{3d^3x^2}{8b^2}+\frac{(c+dx)^4}{8d}+\frac{3d^2(c+dx)\cos(a+bx)\sin(a+bx)}{4b^3}-\frac{(c+dx)^3\mathrm{co}}{}$$

Mathematica [A] time = 0.44, size = 106, normalized size = 0.79

$$\frac{-2b(c+dx)\sin(2(a+bx))\left(2b^2(c+dx)^2-3d^2\right)-3d\cos(2(a+bx))\left(2b^2(c+dx)^2-d^2\right)+2b^4x\left(4c^3+6c^2dx+4\right.}{16b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3*Sin[a + b*x]^2,x]
```

```
[Out] (2*b^4*x*(4*c^3 + 6*c^2*d*x + 4*c*d^2*x^2 + d^3*x^3) - 3*d*(-d^2 + 2*b^2*(c
 + d*x)^2)*Cos[2*(a + b*x)] - 2*b*(c + d*x)*(-3*d^2 + 2*b^2*(c + d*x)^2)*Si
n[2*(a + b*x)])/(16*b^4)
```

fricas [A] time = 0.69, size = 189, normalized size = 1.41

$$\frac{b^4d^3x^4+4\,b^4cd^2x^3+3\left(2\,b^4c^2d+b^2d^3\right)x^2-3\left(2\,b^2d^3x^2+4\,b^2cd^2x+2\,b^2c^2d-d^3\right)\cos\left(bx+a\right)^2-2\left(2\,b^3d^3x^3+\right.}{8\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*(b^4*d^3*x^4 + 4*b^4*c*d^2*x^3 + 3*(2*b^4*c^2*d + b^2*d^3)*x^2 - 3*(2*b
^2*d^3*x^2 + 4*b^2*c*d^2*x + 2*b^2*c^2*d - d^3)*cos(b*x + a)^2 - 2*(2*b^3*d
^3*x^3 + 6*b^3*c*d^2*x^2 + 2*b^3*c^3 - 3*b*c*d^2 + 3*(2*b^3*c^2*d - b*d^3)*
x)*cos(b*x + a)*sin(b*x + a) + 2*(2*b^4*c^3 + 3*b^2*c*d^2)*x)/b^4
```

giac [A] time = 0.32, size = 153, normalized size = 1.14

$$\frac{1}{8}d^3x^4+\frac{1}{2}cd^2x^3+\frac{3}{4}c^2dx^2+\frac{1}{2}c^3x-\frac{3\left(2\,b^2d^3x^2+4\,b^2cd^2x+2\,b^2c^2d-d^3\right)\cos\left(2\,bx+2\,a\right)}{16\,b^4}-\frac{\left(2\,b^3d^3x^3+6\,b^3cd^2x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/8*d^3*x^4 + 1/2*c*d^2*x^3 + 3/4*c^2*d*x^2 + 1/2*c^3*x - 3/16*(2*b^2*d^3*x
^2 + 4*b^2*c*d^2*x + 2*b^2*c^2*d - d^3)*cos(2*b*x + 2*a)/b^4 - 1/8*(2*b^3*d
^3*x^3 + 6*b^3*c*d^2*x^2 + 6*b^3*c^2*d*x + 2*b^3*c^3 - 3*b*d^3*x - 3*b*c*d^
2)*sin(2*b*x + 2*a)/b^4
```

maple [B] time = 0.02, size = 587, normalized size = 4.38

$$\frac{d^3\left((bx+a)^3\left(-\frac{\cos(bx+a)\sin(bx+a)}{2}+\frac{bx}{2}+\frac{a}{2}\right)-\frac{3(bx+a)^2\left(\cos^2(bx+a)\right)}{4}+\frac{3(bx+a)\left(\frac{\cos(bx+a)\sin(bx+a)}{2}+\frac{bx}{2}+\frac{a}{2}\right)}{2}-\frac{3(bx+a)^2}{8}-\frac{3\left(\sin^2(bx+a)\right)}{8}-\frac{3(bx+a)^4}{8}\right)}{b^3}-\frac{3ad^3\left((bx+a)^2\left(-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*sin(b*x+a)^2,x)
```

```
[Out] 1/b*(1/b^3*d^3*((b*x+a)^3*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-3/4*(b
*x+a)^2*cos(b*x+a)^2+3/2*(b*x+a)*(1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-
3/8*(b*x+a)^2-3/8*sin(b*x+a)^2-3/8*(b*x+a)^4)-3/b^3*a*d^3*((b*x+a)^2*(-1/2*
cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-1/2*(b*x+a)*cos(b*x+a)^2+1/4*cos(b*x+a
)*sin(b*x+a)+1/4*b*x+1/4*a-1/3*(b*x+a)^3)+3/b^2*c*d^2*((b*x+a)^2*(-1/2*cos(
b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-1/2*(b*x+a)*cos(b*x+a)^2+1/4*cos(b*x+a)*si
n(b*x+a)+1/4*b*x+1/4*a-1/3*(b*x+a)^3)+3/b^3*a^2*d^3*((b*x+a)*(-1/2*cos(b*x+
a)*sin(b*x+a)+1/2*b*x+1/2*a)-1/4*(b*x+a)^2+1/4*sin(b*x+a)^2)-6/b^2*a*c*d^2*
((b*x+a)*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-1/4*(b*x+a)^2+1/4*sin(b
*x+a)^2)+3/b*c^2*d*((b*x+a)*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-1/4*
(b*x+a)^2+1/4*sin(b*x+a)^2)-1/b^3*a^3*d^3*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b
*x+1/2*a)+3/b^2*a^2*c*d^2*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-3/b*a*
c^2*d*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)+c^3*(-1/2*cos(b*x+a)*sin(b
*x+a)+1/2*b*x+1/2*a))
```

maxima [B] time = 0.37, size = 442, normalized size = 3.30

$$\frac{4\,(2\,bx+2\,a-\sin(2\,bx+2\,a))c^3-\frac{12\,(2\,bx+2\,a-\sin(2\,bx+2\,a))ac^2d}{b}+\frac{12\,(2\,bx+2\,a-\sin(2\,bx+2\,a))a^2cd^2}{b^2}-\frac{4\,(2\,bx+2\,a-\sin(2\,bx+2\,a))a^3d}{b^3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/16*(4*(2*b*x + 2*a - sin(2*b*x + 2*a))*c^3 - 12*(2*b*x + 2*a - sin(2*b*x
+ 2*a))*a*c^2*d/b + 12*(2*b*x + 2*a - sin(2*b*x + 2*a))*a^2*c*d^2/b^2 - 4*(
```

```
2*b*x + 2*a - sin(2*b*x + 2*a))*a^3*d^3/b^3 + 6*(2*(b*x + a)^2 - 2*(b*x + a
)*sin(2*b*x + 2*a) - cos(2*b*x + 2*a))*c^2*d/b - 12*(2*(b*x + a)^2 - 2*(b*x
 + a)*sin(2*b*x + 2*a) - cos(2*b*x + 2*a))*a*c*d^2/b^2 + 6*(2*(b*x + a)^2 -
 2*(b*x + a)*sin(2*b*x + 2*a) - cos(2*b*x + 2*a))*a^2*d^3/b^3 + 2*(4*(b*x +
 a)^3 - 6*(b*x + a)*cos(2*b*x + 2*a) - 3*(2*(b*x + a)^2 - 1)*sin(2*b*x + 2*
a))*c*d^2/b^2 - 2*(4*(b*x + a)^3 - 6*(b*x + a)*cos(2*b*x + 2*a) - 3*(2*(b*x
 + a)^2 - 1)*sin(2*b*x + 2*a))*a*d^3/b^3 + (2*(b*x + a)^4 - 3*(2*(b*x + a)^
2 - 1)*cos(2*b*x + 2*a) - 2*(2*(b*x + a)^3 - 3*b*x - 3*a)*sin(2*b*x + 2*a))
*d^3/b^3)/b
```

mupad [B] time = 0.85, size = 229, normalized size = 1.71

$$\frac{\frac{3\,d^3\,\cos(2\,a+2\,b\,x)}{2}+4\,b^4\,c^3\,x-2\,b^3\,c^3\,\sin\left(2\,a+2\,b\,x\right)+b^4\,d^3\,x^4-3\,b^2\,c^2\,d\,\cos\left(2\,a+2\,b\,x\right)+6\,b^4\,c^2\,d\,x^2+4\,b^4\,c\,d^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(c + d*x)^3,x)
```

```
[Out] ((3*d^3*cos(2*a + 2*b*x))/2 + 4*b^4*c^3*x - 2*b^3*c^3*sin(2*a + 2*b*x) + b^
4*d^3*x^4 - 3*b^2*c^2*d*cos(2*a + 2*b*x) + 6*b^4*c^2*d*x^2 + 4*b^4*c*d^2*x^
3 - 3*b^2*d^3*x^2*cos(2*a + 2*b*x) - 2*b^3*d^3*x^3*sin(2*a + 2*b*x) + 3*b*c
*d^2*sin(2*a + 2*b*x) + 3*b*d^3*x*sin(2*a + 2*b*x) - 6*b^2*c*d^2*x*cos(2*a
+ 2*b*x) - 6*b^3*c^2*d*x*sin(2*a + 2*b*x) - 6*b^3*c*d^2*x^2*sin(2*a + 2*b*x
))/(8*b^4)
```

sympy [A] time = 3.45, size = 456, normalized size = 3.40

$$\begin{cases} \frac{c^3x\sin^2(a+bx)}{2}+\frac{c^3x\cos^2(a+bx)}{2}+\frac{3c^2dx^2\sin^2(a+bx)}{4}+\frac{3c^2dx^2\cos^2(a+bx)}{4}+\frac{cd^2x^3\sin^2(a+bx)}{2}+\frac{cd^2x^3\cos^2(a+bx)}{2}+\frac{d^3x^4\sin^2(a+bx)}{8} \\ \left(c^3x+\frac{3c^2dx^2}{2}+cd^2x^3+\frac{d^3x^4}{4}\right)\sin^2(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*sin(b*x+a)**2,x)
```

```
[Out] Piecewise((c**3*x*sin(a + b*x)**2/2 + c**3*x*cos(a + b*x)**2/2 + 3*c**2*d*x
**2*sin(a + b*x)**2/4 + 3*c**2*d*x**2*cos(a + b*x)**2/4 + c*d**2*x**3*sin(a
 + b*x)**2/2 + c*d**2*x**3*cos(a + b*x)**2/2 + d**3*x**4*sin(a + b*x)**2/8
+ d**3*x**4*cos(a + b*x)**2/8 - c**3*sin(a + b*x)*cos(a + b*x)/(2*b) - 3*c*
*2*d*x*sin(a + b*x)*cos(a + b*x)/(2*b) - 3*c*d**2*x**2*sin(a + b*x)*cos(a +
 b*x)/(2*b) - d**3*x**3*sin(a + b*x)*cos(a + b*x)/(2*b) - 3*c**2*d*cos(a +
b*x)**2/(4*b**2) + 3*c*d**2*x*sin(a + b*x)**2/(4*b**2) - 3*c*d**2*x*cos(a +
 b*x)**2/(4*b**2) + 3*d**3*x**2*sin(a + b*x)**2/(8*b**2) - 3*d**3*x**2*cos(
```

```
a + b*x)**2/(8*b**2) + 3*c*d**2*sin(a + b*x)*cos(a + b*x)/(4*b**3) + 3*d**3
*x*sin(a + b*x)*cos(a + b*x)/(4*b**3) + 3*d**3*cos(a + b*x)**2/(8*b**4), Ne
(b, 0)), ((c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3 + d**3*x**4/4)*sin(a)**2,
 True))
```

3.10 $\int (c+dx)^2 \sin^2(a+bx)\,dx$

Optimal. Leaf size=95

$$\frac{d^2\sin(a+bx)\cos(a+bx)}{4b^3}+\frac{d(c+dx)\sin^2(a+bx)}{2b^2}-\frac{(c+dx)^2\sin(a+bx)\cos(a+bx)}{2b}-\frac{d^2x}{4b^2}+\frac{(c+dx)^3}{6d}$$

```
[Out] -1/4*d^2*x/b^2+1/6*(d*x+c)^3/d+1/4*d^2*cos(b*x+a)*sin(b*x+a)/b^3-1/2*(d*x+c
)^2*cos(b*x+a)*sin(b*x+a)/b+1/2*d*(d*x+c)*sin(b*x+a)^2/b^2
```

Rubi [A] time = 0.05, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3311, 32, 2635, 8}

$$\frac{d(c+dx)\sin^2(a+bx)}{2b^2}+\frac{d^2\sin(a+bx)\cos(a+bx)}{4b^3}-\frac{(c+dx)^2\sin(a+bx)\cos(a+bx)}{2b}-\frac{d^2x}{4b^2}+\frac{(c+dx)^3}{6d}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*Sin[a + b*x]^2,x]
```

```
[Out] -(d^2*x)/(4*b^2) + (c + d*x)^3/(6*d) + (d^2*Cos[a + b*x]*Sin[a + b*x])/(4*b
^3) - ((c + d*x)^2*Cos[a + b*x]*Sin[a + b*x])/(2*b) + (d*(c + d*x)*Sin[a +
b*x]^2)/(2*b^2)
```

Rule 8

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

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2635

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

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
```

```
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rubi steps

$$\int (c+dx)^2\sin^2(a+bx)\,dx = -\frac{(c+dx)^2\cos(a+bx)\sin(a+bx)}{2b} + \frac{d(c+dx)\sin^2(a+bx)}{2b^2} + \frac{1}{2}\int (c+dx)^2\,dx - \frac{a}{}$$
$$= \frac{(c+dx)^3}{6d} + \frac{d^2\cos(a+bx)\sin(a+bx)}{4b^3} - \frac{(c+dx)^2\cos(a+bx)\sin(a+bx)}{2b} + \frac{d(c+}{}$$
$$= -\frac{d^2x}{4b^2} + \frac{(c+dx)^3}{6d} + \frac{d^2\cos(a+bx)\sin(a+bx)}{4b^3} - \frac{(c+dx)^2\cos(a+bx)\sin(a+bx)}{2b}$$

Mathematica [A] time = 0.32, size = 77, normalized size = 0.81

$$\frac{-3\sin(2(a+bx))\left(2b^2(c+dx)^2-d^2\right)-6bd(c+dx)\cos(2(a+bx))+4b^3x\left(3c^2+3cdx+d^2x^2\right)}{24b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*Sin[a + b*x]^2,x]
```

```
[Out] (4*b^3*x*(3*c^2 + 3*c*d*x + d^2*x^2) - 6*b*d*(c + d*x)*Cos[2*(a + b*x)] - 3
*(-d^2 + 2*b^2*(c + d*x)^2)*Sin[2*(a + b*x)])/(24*b^3)
```

fricas [A] time = 0.67, size = 112, normalized size = 1.18

$$\frac{2\,b^3d^2x^3+6\,b^3cdx^2-6\left(bd^2x+bcd\right)\cos\left(bx+a\right)^2-3\left(2\,b^2d^2x^2+4\,b^2cdx+2\,b^2c^2-d^2\right)\cos\left(bx+a\right)\sin\left(bx+a\right)}{12\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/12*(2*b^3*d^2*x^3 + 6*b^3*c*d*x^2 - 6*(b*d^2*x + b*c*d)*cos(b*x + a)^2 -
3*(2*b^2*d^2*x^2 + 4*b^2*c*d*x + 2*b^2*c^2 - d^2)*cos(b*x + a)*sin(b*x + a)
 + 3*(2*b^3*c^2 + b*d^2)*x)/b^3
```

giac [A] time = 0.82, size = 94, normalized size = 0.99

$$\frac{1}{6}\,d^2x^3+\frac{1}{2}\,cdx^2+\frac{1}{2}\,c^2x-\frac{\left(bd^2x+bcd\right)\cos\left(2\,bx+2\,a\right)}{4\,b^3}-\frac{\left(2\,b^2d^2x^2+4\,b^2cdx+2\,b^2c^2-d^2\right)\sin\left(2\,bx+2\,a\right)}{8\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6*d^2*x^3 + 1/2*c*d*x^2 + 1/2*c^2*x - 1/4*(b*d^2*x + b*c*d)*cos(2*b*x + 2
*a)/b^3 - 1/8*(2*b^2*d^2*x^2 + 4*b^2*c*d*x + 2*b^2*c^2 - d^2)*sin(2*b*x + 2
*a)/b^3
```

maple [B] time = 0.02, size = 289, normalized size = 3.04

$$\frac{\frac{d^2\left((bx+a)^2\left(-\frac{\cos(bx+a)\sin(bx+a)}{2}+\frac{bx}{2}+\frac{a}{2}\right)-\frac{(bx+a)\left(\cos^2(bx+a)\right)}{2}+\frac{\cos(bx+a)\sin(bx+a)}{4}+\frac{bx}{4}+\frac{a}{4}-\frac{(bx+a)^3}{3}\right)}{b^2}-\frac{2a\,d^2\left((bx+a)\left(-\frac{\cos(bx+a)\sin(bx+a)}{2}+\frac{bx}{2}+\frac{a}{2}\right)-\frac{(bx+a)}{4}\right.}{b^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*sin(b*x+a)^2,x)
```

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

maxima [B] time = 0.40, size = 232, normalized size = 2.44

$$\frac{6\,(2\,bx+2\,a-\sin(2\,bx+2\,a))c^2-\frac{12\,(2\,bx+2\,a-\sin(2\,bx+2\,a))acd}{b}+\frac{6\,(2\,bx+2\,a-\sin(2\,bx+2\,a))a^2d^2}{b^2}+\frac{6\left(2\,(bx+a)^2-2\,(bx+a)\sin(2\,bx\right.}{b}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/24*(6*(2*b*x + 2*a - sin(2*b*x + 2*a))*c^2 - 12*(2*b*x + 2*a - sin(2*b*x
+ 2*a))*a*c*d/b + 6*(2*b*x + 2*a - sin(2*b*x + 2*a))*a^2*d^2/b^2 + 6*(2*(b*
x + a)^2 - 2*(b*x + a)*sin(2*b*x + 2*a) - cos(2*b*x + 2*a))*c*d/b - 6*(2*(b
*x + a)^2 - 2*(b*x + a)*sin(2*b*x + 2*a) - cos(2*b*x + 2*a))*a*d^2/b^2 + (4
*(b*x + a)^3 - 6*(b*x + a)*cos(2*b*x + 2*a) - 3*(2*(b*x + a)^2 - 1)*sin(2*b
*x + 2*a))*d^2/b^2)/b
```

mupad [B] time = 0.20, size = 179, normalized size = 1.88

$$x\left(\frac{c^2}{4}-\frac{d^2}{8\,b^2}\right)+x\left(\frac{c^2}{4}+\frac{d^2}{8\,b^2}\right)+\frac{d^2\,x^3}{6}+\frac{\sin(2\,a+2\,b\,x)\,\left(d^2-2\,b^2\,c^2\right)}{8\,b^3}+\frac{x\,\cos(2\,a+2\,b\,x)\,\left(\frac{c^2}{2}-\frac{d^2}{4\,b^2}\right)}{2}-\frac{x\,\cos(2\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(c + d*x)^2,x)
```

```
[Out] x*(c^2/4 - d^2/(8*b^2)) + x*(c^2/4 + d^2/(8*b^2)) + (d^2*x^3)/6 + (sin(2*a
+ 2*b*x)*(d^2 - 2*b^2*c^2))/(8*b^3) + (x*cos(2*a + 2*b*x)*(c^2/2 - d^2/(4*b
^2)))/2 - (x*cos(2*a + 2*b*x)*(c^2/2 + d^2/(4*b^2)))/2 + (c*d*x^2)/2 - (d^2
*x^2*sin(2*a + 2*b*x))/(4*b) - (c*d*cos(2*a + 2*b*x))/(4*b^2) - (c*d*x*sin(
2*a + 2*b*x))/(2*b)
```

sympy [A] time = 1.57, size = 264, normalized size = 2.78

$$\begin{cases} \frac{c^2x\sin^2(a+bx)}{2} + \frac{c^2x\cos^2(a+bx)}{2} + \frac{cdx^2\sin^2(a+bx)}{2} + \frac{cdx^2\cos^2(a+bx)}{2} + \frac{d^2x^3\sin^2(a+bx)}{6} + \frac{d^2x^3\cos^2(a+bx)}{6} - \frac{c^2\sin(a+bx)\cos(a+bx)}{2b} - \\ \left(c^2x + cdx^2 + \frac{d^2x^3}{3}\right)\sin^2(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*sin(b*x+a)**2,x)
```

```
[Out] Piecewise((c**2*x*sin(a + b*x)**2/2 + c**2*x*cos(a + b*x)**2/2 + c*d*x**2*s
in(a + b*x)**2/2 + c*d*x**2*cos(a + b*x)**2/2 + d**2*x**3*sin(a + b*x)**2/6
 + d**2*x**3*cos(a + b*x)**2/6 - c**2*sin(a + b*x)*cos(a + b*x)/(2*b) - c*d
*x*sin(a + b*x)*cos(a + b*x)/b - d**2*x**2*sin(a + b*x)*cos(a + b*x)/(2*b)
- c*d*cos(a + b*x)**2/(2*b**2) + d**2*x*sin(a + b*x)**2/(4*b**2) - d**2*x*c
os(a + b*x)**2/(4*b**2) + d**2*sin(a + b*x)*cos(a + b*x)/(4*b**3), Ne(b, 0)
), ((c**2*x + c*d*x**2 + d**2*x**3/3)*sin(a)**2, True))
```

3.11 $\int (c+dx)\sin^2(a+bx)\,dx$

Optimal. Leaf size=55

$$\frac{d\sin^2(a+bx)}{4b^2}-\frac{(c+dx)\sin(a+bx)\cos(a+bx)}{2b}+\frac{cx}{2}+\frac{dx^2}{4}$$

```
[Out] 1/2*c*x+1/4*d*x^2-1/2*(d*x+c)*cos(b*x+a)*sin(b*x+a)/b+1/4*d*sin(b*x+a)^2/b^
2
```

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {3310}

$$\frac{d\sin^2(a+bx)}{4b^2}-\frac{(c+dx)\sin(a+bx)\cos(a+bx)}{2b}+\frac{cx}{2}+\frac{dx^2}{4}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*Sin[a + b*x]^2,x]
```

```
[Out] (c*x)/2 + (d*x^2)/4 - ((c + d*x)*Cos[a + b*x]*Sin[a + b*x])/(2*b) + (d*Sin[
a + b*x]^2)/(4*b^2)
```

Rule 3310

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

Rubi steps

$$\begin{aligned}\int (c+dx)\sin^2(a+bx)\,dx &= -\frac{(c+dx)\cos(a+bx)\sin(a+bx)}{2b}+\frac{d\sin^2(a+bx)}{4b^2}+\frac{1}{2}\int (c+dx)\,dx\\ &= \frac{cx}{2}+\frac{dx^2}{4}-\frac{(c+dx)\cos(a+bx)\sin(a+bx)}{2b}+\frac{d\sin^2(a+bx)}{4b^2}\end{aligned}$$

Mathematica [A] time = 0.16, size = 52, normalized size = 0.95

$$\frac{2b(-(c+dx)\sin(2(a+bx))+2ac+bx(2c+dx))-d\cos(2(a+bx))}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*Sin[a + b*x]^2,x]
```

```
[Out] (-(d*Cos[2*(a + b*x)]) + 2*b*(2*a*c + b*x*(2*c + d*x) - (c + d*x)*Sin[2*(a
+ b*x)]))/(8*b^2)
```

fricas [A] time = 0.82, size = 54, normalized size = 0.98

$$\frac{b^2dx^2 + 2\,b^2cx - d\cos\left(bx+a\right)^2 - 2\left(bdx+bc\right)\cos\left(bx+a\right)\sin\left(bx+a\right)}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(b^2*d*x^2 + 2*b^2*c*x - d*cos(b*x + a)^2 - 2*(b*d*x + b*c)*cos(b*x + a
)*sin(b*x + a))/b^2
```

giac [A] time = 0.42, size = 48, normalized size = 0.87

$$\frac{1}{4}\,dx^2 + \frac{1}{2}\,cx - \frac{d\cos\left(2\,bx+2\,a\right)}{8\,b^2} - \frac{\left(bdx+bc\right)\sin\left(2\,bx+2\,a\right)}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [B] time = 0.02, size = 112, normalized size = 2.04

$$\frac{\frac{d\left((bx+a)\left(-\frac{\cos(bx+a)\sin(bx+a)}{2}+\frac{bx}{2}+\frac{a}{2}\right)-\frac{(bx+a)^2}{4}+\frac{\left(\sin^2(bx+a)\right)}{4}\right)}{b} - \frac{da\left(-\frac{\cos(bx+a)\sin(bx+a)}{2}+\frac{bx}{2}+\frac{a}{2}\right)}{b} + c\left(-\frac{\cos(bx+a)\sin(bx+a)}{2}+\frac{bx}{2}+\frac{a}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*sin(b*x+a)^2,x)
```

```
[Out] 1/b*(1/b*d*((b*x+a)*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)-1/4*(b*x+a)^
2+1/4*sin(b*x+a)^2)-1/b*d*a*(-1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a)+c*(-
1/2*cos(b*x+a)*sin(b*x+a)+1/2*b*x+1/2*a))
```

maxima [B] time = 0.30, size = 96, normalized size = 1.75

$$\frac{2\left(2\,bx+2\,a-\sin\left(2\,bx+2\,a\right)\right)c - \frac{2\left(2\,bx+2\,a-\sin(2\,bx+2\,a)\right)ad}{b} + \frac{\left(2\,(bx+a)^2-2\,(bx+a)\sin(2\,bx+2\,a)-\cos(2\,bx+2\,a)\right)d}{b}}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(2*(2*b*x + 2*a - sin(2*b*x + 2*a))*c - 2*(2*b*x + 2*a - sin(2*b*x + 2*
a))*a*d/b + (2*(b*x + a)^2 - 2*(b*x + a)*sin(2*b*x + 2*a) - cos(2*b*x + 2*a
))*d/b)/b
```

mupad [B] time = 0.09, size = 57, normalized size = 1.04

$$\frac{c\,x}{2}+\frac{d\,x^2}{4}-\frac{d\,\cos\left(2\,a+2\,b\,x\right)}{8\,b^2}-\frac{c\,\sin\left(2\,a+2\,b\,x\right)}{4\,b}-\frac{d\,x\,\sin\left(2\,a+2\,b\,x\right)}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(c + d*x),x)
```

```
[Out] (c*x)/2 + (d*x^2)/4 - (d*cos(2*a + 2*b*x))/(8*b^2) - (c*sin(2*a + 2*b*x))/(
4*b) - (d*x*sin(2*a + 2*b*x))/(4*b)
```

sympy [A] time = 0.67, size = 126, normalized size = 2.29

$$\begin{cases} \frac{cx\sin^2(a+bx)}{2}+\frac{cx\cos^2(a+bx)}{2}+\frac{dx^2\sin^2(a+bx)}{4}+\frac{dx^2\cos^2(a+bx)}{4}-\frac{c\sin(a+bx)\cos(a+bx)}{2b}-\frac{dx\sin(a+bx)\cos(a+bx)}{2b}-\frac{d\cos^2(a+bx)}{4b^2} \\ \left(cx+\frac{dx^2}{2}\right)\sin^2(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*sin(b*x+a)**2,x)
```

```
[Out] Piecewise((c*x*sin(a + b*x)**2/2 + c*x*cos(a + b*x)**2/2 + d*x**2*sin(a + b
*x)**2/4 + d*x**2*cos(a + b*x)**2/4 - c*sin(a + b*x)*cos(a + b*x)/(2*b) - d
*x*sin(a + b*x)*cos(a + b*x)/(2*b) - d*cos(a + b*x)**2/(4*b**2), Ne(b, 0)),
 ((c*x + d*x**2/2)*sin(a)**2, True))
```

3.12 $\int \frac{\sin^2(a+bx)}{c+dx}\,dx$

Optimal. Leaf size=78

$$-\frac{\cos\left(2a-\frac{2bc}{d}\right)\mathrm{Ci}\left(\frac{2bc}{d}+2bx\right)}{2d}+\frac{\sin\left(2a-\frac{2bc}{d}\right)\mathrm{Si}\left(\frac{2bc}{d}+2bx\right)}{2d}+\frac{\log(c+dx)}{2d}$$

```
[Out] -1/2*Ci(2*b*c/d+2*b*x)*cos(2*a-2*b*c/d)/d+1/2*ln(d*x+c)/d+1/2*Si(2*b*c/d+2*
b*x)*sin(2*a-2*b*c/d)/d
```

Rubi [A] time = 0.17, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3312, 3303, 3299, 3302}

$$-\frac{\cos\left(2a-\frac{2bc}{d}\right)\mathrm{CosIntegral}\left(\frac{2bc}{d}+2bx\right)}{2d}+\frac{\sin\left(2a-\frac{2bc}{d}\right)\mathrm{Si}\left(\frac{2bc}{d}+2bx\right)}{2d}+\frac{\log(c+dx)}{2d}$$

Antiderivative was successfully verified.

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

```
[Out] -(Cos[2*a - (2*b*c)/d]*CosIntegral[(2*b*c)/d + 2*b*x])/(2*d) + Log[c + d*x]
/(2*d) + (Sin[2*a - (2*b*c)/d]*SinIntegral[(2*b*c)/d + 2*b*x])/(2*d)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^2(a+bx)}{c+dx}\,dx &= \int \left(\frac{1}{2(c+dx)} - \frac{\cos(2a+2bx)}{2(c+dx)}\right) dx \\
&= \frac{\log(c+dx)}{2d} - \frac{1}{2}\int \frac{\cos(2a+2bx)}{c+dx}\,dx \\
&= \frac{\log(c+dx)}{2d} - \frac{1}{2}\cos\left(2a-\frac{2bc}{d}\right)\int \frac{\cos\left(\frac{2bc}{d}+2bx\right)}{c+dx}\,dx + \frac{1}{2}\sin\left(2a-\frac{2bc}{d}\right)\int \frac{\sin\left(\frac{2bc}{d}+2bx\right)}{c+dx}\,dx \\
&= -\frac{\cos\left(2a-\frac{2bc}{d}\right)\text{Ci}\left(\frac{2bc}{d}+2bx\right)}{2d} + \frac{\log(c+dx)}{2d} + \frac{\sin\left(2a-\frac{2bc}{d}\right)\text{Si}\left(\frac{2bc}{d}+2bx\right)}{2d}
\end{aligned}$$

Mathematica [A] time = 0.11, size = 65, normalized size = 0.83

$$\frac{-\cos\left(2a-\frac{2bc}{d}\right)\text{Ci}\left(\frac{2b(c+dx)}{d}\right)+\sin\left(2a-\frac{2bc}{d}\right)\text{Si}\left(\frac{2b(c+dx)}{d}\right)+\log(c+dx)}{2d}$$

Antiderivative was successfully verified.

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

```
[Out] (-(Cos[2*a - (2*b*c)/d]*CosIntegral[(2*b*(c + d*x))/d]) + Log[c + d*x] + Si
n[2*a - (2*b*c)/d]*SinIntegral[(2*b*(c + d*x))/d])/(2*d)
```

fricas [A] time = 0.94, size = 88, normalized size = 1.13

$$-\frac{\left(\text{Ci}\left(\frac{2\,(bdx+bc)}{d}\right)+\text{Ci}\left(-\frac{2\,(bdx+bc)}{d}\right)\right)\cos\left(-\frac{2\,(bc-ad)}{d}\right)-2\,\sin\left(-\frac{2\,(bc-ad)}{d}\right)\text{Si}\left(\frac{2\,(bdx+bc)}{d}\right)-2\,\log\left(dx+c\right)}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c),x, algorithm="fricas")
```

```
[Out] -1/4*((cos_integral(2*(b*d*x + b*c)/d) + cos_integral(-2*(b*d*x + b*c)/d))*
cos(-2*(b*c - a*d)/d) - 2*sin(-2*(b*c - a*d)/d)*sin_integral(2*(b*d*x + b*c
)/d) - 2*log(d*x + c))/d
```

giac [C] time = 0.66, size = 612, normalized size = 7.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c),x, algorithm="giac")
```

```
[Out] 1/4*(2*log(abs(d*x + c))*tan(a)^2*tan(b*c/d)^2 - real_part(cos_integral(2*b
*x + 2*b*c/d))*tan(a)^2*tan(b*c/d)^2 - real_part(cos_integral(-2*b*x - 2*b*
c/d))*tan(a)^2*tan(b*c/d)^2 + 2*imag_part(cos_integral(2*b*x + 2*b*c/d))*ta
n(a)^2*tan(b*c/d) - 2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)^2*ta
n(b*c/d) + 4*sin_integral(2*(b*d*x + b*c)/d)*tan(a)^2*tan(b*c/d) - 2*imag_p
art(cos_integral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d)^2 + 2*imag_part(cos_in
tegral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d)^2 - 4*sin_integral(2*(b*d*x + b
*c)/d)*tan(a)*tan(b*c/d)^2 + 2*log(abs(d*x + c))*tan(a)^2 + real_part(cos_i
ntegral(2*b*x + 2*b*c/d))*tan(a)^2 + real_part(cos_integral(-2*b*x - 2*b*c/
d))*tan(a)^2 - 4*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d)
 - 4*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d) + 2*log(ab
s(d*x + c))*tan(b*c/d)^2 + real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*c
/d)^2 + real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*c/d)^2 + 2*imag_par
t(cos_integral(2*b*x + 2*b*c/d))*tan(a) - 2*imag_part(cos_integral(-2*b*x -
 2*b*c/d))*tan(a) + 4*sin_integral(2*(b*d*x + b*c)/d)*tan(a) - 2*imag_part(
cos_integral(2*b*x + 2*b*c/d))*tan(b*c/d) + 2*imag_part(cos_integral(-2*b*x
 - 2*b*c/d))*tan(b*c/d) - 4*sin_integral(2*(b*d*x + b*c)/d)*tan(b*c/d) + 2*
log(abs(d*x + c)) - real_part(cos_integral(2*b*x + 2*b*c/d)) - real_part(co
s_integral(-2*b*x - 2*b*c/d)))/(d*tan(a)^2*tan(b*c/d)^2 + d*tan(a)^2 + d*ta
n(b*c/d)^2 + d)
```

maple [A] time = 0.02, size = 105, normalized size = 1.35

$$\frac{\ln\left(\left(bx+a\right)d-da+cb\right)}{2d}-\frac{\mathrm{Si}\left(2bx+2a+\frac{-2da+2cb}{d}\right)\sin\left(\frac{-2da+2cb}{d}\right)}{2d}-\frac{\mathrm{Ci}\left(2bx+2a+\frac{-2da+2cb}{d}\right)\cos\left(\frac{-2da+2cb}{d}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*x+c),x)
```

```
[Out] 1/2*ln((b*x+a)*d-d*a+c*b)/d-1/2*Si(2*b*x+2*a+2*(-a*d+b*c)/d)*sin(2*(-a*d+b*
c)/d)/d-1/2*Ci(2*b*x+2*a+2*(-a*d+b*c)/d)*cos(2*(-a*d+b*c)/d)/d
```

maxima [C] time = 0.42, size = 160, normalized size = 2.05

$$\frac{b\left(E_1\left(\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)+E_1\left(-\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)\right)\cos\left(-\frac{2\,(bc-ad)}{d}\right)+b\left(-i\,E_1\left(\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)+i\,E_1\left(-\frac{2i\,bc+2}{}\right.\right.}{4\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c),x, algorithm="maxima")
```

```
[Out] 1/4*(b*(exp_integral_e(1, (2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d) + exp_in
tegral_e(1, -(2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d))*cos(-2*(b*c - a*d)/d
) + b*(-I*exp_integral_e(1, (2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d) + I*ex
p_integral_e(1, -(2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d))*sin(-2*(b*c - a*
d)/d) + 2*b*log(b*c + (b*x + a)*d - a*d))/(b*d)
```

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

$$\int \frac{\sin(a+b\,x)^2}{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(c + d*x),x)
```

```
[Out] int(sin(a + b*x)^2/(c + d*x), x)
```

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

$$\int \frac{\sin^2(a+bx)}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*x+c),x)
```

```
[Out] Integral(sin(a + b*x)**2/(c + d*x), x)
```

3.13 $\int \frac{\sin^2(a+bx)}{(c+dx)^2}\,dx$

Optimal. Leaf size=81

$$\frac{b\sin\left(2a-\frac{2bc}{d}\right)\operatorname{Ci}\left(\frac{2bc}{d}+2bx\right)}{d^2}+\frac{b\cos\left(2a-\frac{2bc}{d}\right)\operatorname{Si}\left(\frac{2bc}{d}+2bx\right)}{d^2}-\frac{\sin^2(a+bx)}{d(c+dx)}$$

```
[Out] b*cos(2*a-2*b*c/d)*Si(2*b*c/d+2*b*x)/d^2+b*Ci(2*b*c/d+2*b*x)*sin(2*a-2*b*c/
d)/d^2-sin(b*x+a)^2/d/(d*x+c)
```

Rubi [A] time = 0.14, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3313, 12, 3303, 3299, 3302}

$$\frac{b\sin\left(2a-\frac{2bc}{d}\right)\text{CosIntegral}\left(\frac{2bc}{d}+2bx\right)}{d^2}+\frac{b\cos\left(2a-\frac{2bc}{d}\right)\operatorname{Si}\left(\frac{2bc}{d}+2bx\right)}{d^2}-\frac{\sin^2(a+bx)}{d(c+dx)}$$

Antiderivative was successfully verified.

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

```
[Out] (b*CosIntegral[(2*b*c)/d + 2*b*x]*Sin[2*a - (2*b*c)/d])/d^2 - Sin[a + b*x]^
2/(d*(c + d*x)) + (b*Cos[2*a - (2*b*c)/d]*SinIntegral[(2*b*c)/d + 2*b*x])/d
^2
```

Rule 12

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

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sin^2(a+bx)}{(c+dx)^2}\,dx &= -\frac{\sin^2(a+bx)}{d(c+dx)}+\frac{(2b)\int \frac{\sin(2a+2bx)}{2(c+dx)}\,dx}{d}\\
&= -\frac{\sin^2(a+bx)}{d(c+dx)}+\frac{b\int \frac{\sin(2a+2bx)}{c+dx}\,dx}{d}\\
&= -\frac{\sin^2(a+bx)}{d(c+dx)}+\frac{\left(b\cos\left(2a-\frac{2bc}{d}\right)\right)\int \frac{\sin\left(\frac{2bc}{d}+2bx\right)}{c+dx}\,dx}{d}+\frac{\left(b\sin\left(2a-\frac{2bc}{d}\right)\right)\int \frac{\cos\left(\frac{2bc}{d}+2bx\right)}{c+dx}\,dx}{d}\\
&= \frac{b\text{Ci}\left(\frac{2bc}{d}+2bx\right)\sin\left(2a-\frac{2bc}{d}\right)}{d^2}-\frac{\sin^2(a+bx)}{d(c+dx)}+\frac{b\cos\left(2a-\frac{2bc}{d}\right)\text{Si}\left(\frac{2bc}{d}+2bx\right)}{d^2}
\end{aligned}
$$

Mathematica [A] time = 0.42, size = 75, normalized size = 0.93

$$\frac{b\sin\left(2a-\frac{2bc}{d}\right)\text{Ci}\left(\frac{2b(c+dx)}{d}\right)+b\cos\left(2a-\frac{2bc}{d}\right)\text{Si}\left(\frac{2b(c+dx)}{d}\right)-\frac{d\sin^2(a+bx)}{c+dx}}{d^2}$$

Antiderivative was successfully verified.

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

[Out] (b*CosIntegral[(2*b*(c + d*x))/d]*Sin[2*a - (2*b*c)/d] - (d*Sin[a + b*x]^2)
/(c + d*x) + b*Cos[2*a - (2*b*c)/d]*SinIntegral[(2*b*(c + d*x))/d])/d^2
```

fricas [A] time = 0.98, size = 130, normalized size = 1.60

$$\frac{2\,d\cos\left(bx+a\right)^{2}+2\,(bdx+bc)\cos\left(-\frac{2\,(bc-ad)}{d}\right)\mathrm{Si}\left(\frac{2\,(bdx+bc)}{d}\right)+\left((bdx+bc)\,\mathrm{Ci}\left(\frac{2\,(bdx+bc)}{d}\right)+(bdx+bc)\,\mathrm{Ci}\left(-\frac{2\,(bdx+}{d}\right.\right.}{2\left(d^{3}x+cd^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(2*d*cos(b*x + a)^2 + 2*(b*d*x + b*c)*cos(-2*(b*c - a*d)/d)*sin_integra
l(2*(b*d*x + b*c)/d) + ((b*d*x + b*c)*cos_integral(2*(b*d*x + b*c)/d) + (b*
d*x + b*c)*cos_integral(-2*(b*d*x + b*c)/d))*sin(-2*(b*c - a*d)/d) - 2*d)/(
d^3*x + c*d^2)
```

giac [B] time = 1.37, size = 535, normalized size = 6.60

$$\frac{\left(2\,(dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)b^{2}\,\mathrm{Ci}\left(\frac{2\left((dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)+bc-ad\right)}{d}\right)\sin\left(-\frac{2\,(bc-ad)}{d}\right)+2\,b^{3}c\,\mathrm{Ci}\left(\frac{2\left((dx+c)\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)+bc-a\right.}{d}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^2,x, algorithm="giac")
```

```
[Out] 1/2*(2*(d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c))*b^2*cos_integral(2*((d
*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d)*sin(-2*(b*c - a
*d)/d) + 2*b^3*c*cos_integral(2*((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x +
c)) + b*c - a*d)/d)*sin(-2*(b*c - a*d)/d) - 2*a*b^2*d*cos_integral(2*((d*x
+ c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d)*sin(-2*(b*c - a*d)
/d) - 2*(d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c))*b^2*cos(-2*(b*c - a*d
)/d)*sin_integral(-2*((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c -
 a*d)/d) - 2*b^3*c*cos(-2*(b*c - a*d)/d)*sin_integral(-2*((d*x + c)*(b - b*
c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) + 2*a*b^2*d*cos(-2*(b*c - a*d)
/d)*sin_integral(-2*((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c -
a*d)/d) + b^2*d*cos(-2*(d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c))/d) - b
^2*d)*d^2/(((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c))*d^4 + b*c*d^4 - a
*d^5)*b)
```

maple [A] time = 0.02, size = 156, normalized size = 1.93

$$\frac{-\frac{b^{2}}{2((bx+a)d-da+cb)d}-\frac{b^{2}\left(-\frac{2\cos(2bx+2a)}{((bx+a)d-da+cb)d}-\frac{2\left(\frac{2\,\mathrm{Si}\left(2bx+2a+\frac{-2da+2cb}{d}\right)\cos\left(\frac{-2da+2cb}{d}\right)}{d}-\frac{2\,\mathrm{Ci}\left(2bx+2a+\frac{-2da+2cb}{d}\right)\sin\left(\frac{-2da+2cb}{d}\right)}{d}\right)}{d}\right)}{4}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*x+c)^2,x)
```

```
[Out] 1/b*(-1/2*b^2/((b*x+a)*d-d*a+c*b)/d-1/4*b^2*(-2*cos(2*b*x+2*a)/((b*x+a)*d-d
*a+c*b)/d-2*(2*Si(2*b*x+2*a+2*(-a*d+b*c)/d)*cos(2*(-a*d+b*c)/d)/d-2*Ci(2*b*
x+2*a+2*(-a*d+b*c)/d)*sin(2*(-a*d+b*c)/d)/d)/d))
```

maxima [C] time = 0.61, size = 171, normalized size = 2.11

$$\frac{16\,b^2\left(E_2\left(\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)+E_2\left(-\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)\right)\cos\left(-\frac{2\,(bc-ad)}{d}\right)-b^2\left(16i\,E_2\left(\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)-16i\,E_2\right.}{64\left(bcd+(bx+a)d^2-ad^2\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] 1/64*(16*b^2*(exp_integral_e(2, (2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d) +
exp_integral_e(2, -(2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d))*cos(-2*(b*c -
a*d)/d) - b^2*(16*I*exp_integral_e(2, (2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)
/d) - 16*I*exp_integral_e(2, -(2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d))*sin
(-2*(b*c - a*d)/d) - 32*b^2)/((b*c*d + (b*x + a)*d^2 - a*d^2)*b)
```

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

$$\int \frac{\sin\left(a+b\,x\right)^2}{\left(c+d\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(c + d*x)^2,x)
```

```
[Out] int(sin(a + b*x)^2/(c + d*x)^2, x)
```

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

$$\int \frac{\sin^2\left(a+bx\right)}{\left(c+dx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*x+c)**2,x)
```

```
[Out] Integral(sin(a + b*x)**2/(c + d*x)**2, x)
```

3.14 $\int \frac{\sin^2(a+bx)}{(c+dx)^3}\,dx$

Optimal. Leaf size=113

$$\frac{b^2\cos\left(2a-\frac{2bc}{d}\right)\text{Ci}\left(\frac{2bc}{d}+2bx\right)}{d^3}-\frac{b^2\sin\left(2a-\frac{2bc}{d}\right)\text{Si}\left(\frac{2bc}{d}+2bx\right)}{d^3}-\frac{b\sin(a+bx)\cos(a+bx)}{d^2(c+dx)}-\frac{\sin^2(a+bx)}{2d(c+dx)^2}$$

```
[Out] b^2*Ci(2*b*c/d+2*b*x)*cos(2*a-2*b*c/d)/d^3-b^2*Si(2*b*c/d+2*b*x)*sin(2*a-2*
b*c/d)/d^3-b*cos(b*x+a)*sin(b*x+a)/d^2/(d*x+c)-1/2*sin(b*x+a)^2/d/(d*x+c)^2
```

Rubi [A] time = 0.19, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {3314, 31, 3312, 3303, 3299, 3302}

$$\frac{b^2\cos\left(2a-\frac{2bc}{d}\right)\text{CosIntegral}\left(\frac{2bc}{d}+2bx\right)}{d^3}-\frac{b^2\sin\left(2a-\frac{2bc}{d}\right)\text{Si}\left(\frac{2bc}{d}+2bx\right)}{d^3}-\frac{b\sin(a+bx)\cos(a+bx)}{d^2(c+dx)}-\frac{\sin^2(a+}{2d(c+d}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2/(c + d*x)^3,x]
```

```
[Out] (b^2*Cos[2*a - (2*b*c)/d]*CosIntegral[(2*b*c)/d + 2*b*x])/d^3 - (b*Cos[a +
b*x]*Sin[a + b*x])/(d^2*(c + d*x)) - Sin[a + b*x]^2/(2*d*(c + d*x)^2) - (b^
2*Sin[2*a - (2*b*c)/d]*SinIntegral[(2*b*c)/d + 2*b*x])/d^3
```

Rule 31

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

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sin^2(a+bx)}{(c+dx)^3}\,dx &= -\frac{b\cos(a+bx)\sin(a+bx)}{d^2(c+dx)} - \frac{\sin^2(a+bx)}{2d(c+dx)^2} + \frac{b^2\int \frac{1}{c+dx}\,dx}{d^2} - \frac{\left(2b^2\right)\int \frac{\sin^2(a+bx)}{c+dx}\,dx}{d^2} \\
&= \frac{b^2\log(c+dx)}{d^3} - \frac{b\cos(a+bx)\sin(a+bx)}{d^2(c+dx)} - \frac{\sin^2(a+bx)}{2d(c+dx)^2} - \frac{\left(2b^2\right)\int \left(\frac{1}{2(c+dx)} - \frac{\cos(2a+2bx)}{2(c+dx)}\right.}{d^2} \\
&= -\frac{b\cos(a+bx)\sin(a+bx)}{d^2(c+dx)} - \frac{\sin^2(a+bx)}{2d(c+dx)^2} + \frac{b^2\int \frac{\cos(2a+2bx)}{c+dx}\,dx}{d^2} \\
&= -\frac{b\cos(a+bx)\sin(a+bx)}{d^2(c+dx)} - \frac{\sin^2(a+bx)}{2d(c+dx)^2} + \frac{\left(b^2\cos\left(2a-\frac{2bc}{d}\right)\right)\int \frac{\cos\left(\frac{2bc}{d}+2bx\right)}{c+dx}\,dx}{d^2} - \frac{\left(b^2\sin\right.}{} \\
&= \frac{b^2\cos\left(2a-\frac{2bc}{d}\right)\text{Ci}\left(\frac{2bc}{d}+2bx\right)}{d^3} - \frac{b\cos(a+bx)\sin(a+bx)}{d^2(c+dx)} - \frac{\sin^2(a+bx)}{2d(c+dx)^2} - \frac{b^2\sin\left(2a-\right.}{}
\end{aligned}
$$

Mathematica [A] time = 1.20, size = 101, normalized size = 0.89

$$-\frac{-2b^2\cos\left(2a-\frac{2bc}{d}\right)\text{Ci}\left(\frac{2b(c+dx)}{d}\right)+2b^2\sin\left(2a-\frac{2bc}{d}\right)\text{Si}\left(\frac{2b(c+dx)}{d}\right)+\frac{d\left(b(c+dx)\sin(2(a+bx))+d\sin^2(a+bx)\right)}{(c+dx)^2}}{2d^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2/(c + d*x)^3,x]
```

```
[Out] -1/2*(-2*b^2*Cos[2*a - (2*b*c)/d]*CosIntegral[(2*b*(c + d*x))/d] + (d*(d*Si
n[a + b*x]^2 + b*(c + d*x)*Sin[2*(a + b*x)]))/(c + d*x)^2 + 2*b^2*Sin[2*a -
 (2*b*c)/d]*SinIntegral[(2*b*(c + d*x))/d])/d^3
```

fricas [B] time = 0.95, size = 223, normalized size = 1.97

$$\frac{d^2\cos(bx+a)^2-2\left(bd^2x+bcd\right)\cos(bx+a)\sin(bx+a)-2\left(b^2d^2x^2+2\,b^2cdx+b^2c^2\right)\sin\left(-\frac{2\,(bc-ad)}{d}\right)\text{Si}\left(\frac{2\,(bdx+b}{d}\right.}{2\left(d^5x^2+2\,c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(d^2*cos(b*x + a)^2 - 2*(b*d^2*x + b*c*d)*cos(b*x + a)*sin(b*x + a) - 2
*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*sin(-2*(b*c - a*d)/d)*sin_integral(2
*(b*d*x + b*c)/d) - d^2 + ((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos_integr
al(2*(b*d*x + b*c)/d) + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos_integral(
-2*(b*d*x + b*c)/d))*cos(-2*(b*c - a*d)/d))/(d^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

giac [C] time = 1.85, size = 5141, normalized size = 45.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^3,x, algorithm="giac")
```

```
[Out] 1/2*(b^2*d^2*x^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)
^2*tan(b*c/d)^2 + b^2*d^2*x^2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan
(b*x)^2*tan(a)^2*tan(b*c/d)^2 - 2*b^2*d^2*x^2*imag_part(cos_integral(2*b*x
+ 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d) + 2*b^2*d^2*x^2*imag_part(cos_in
tegral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d) - 4*b^2*d^2*x^2*si
n_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a)^2*tan(b*c/d) + 2*b^2*d^2*x^
2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)^2 -
 2*b^2*d^2*x^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)*
tan(b*c/d)^2 + 4*b^2*d^2*x^2*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan
```

```
(a)*tan(b*c/d)^2 + 2*b^2*c*d*x*real_part(cos_integral(2*b*x + 2*b*c/d))*tan
(b*x)^2*tan(a)^2*tan(b*c/d)^2 + 2*b^2*c*d*x*real_part(cos_integral(-2*b*x -
 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 - b^2*d^2*x^2*real_part(cos_int
egral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)^2 - b^2*d^2*x^2*real_part(cos_int
egral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)^2 + 4*b^2*d^2*x^2*real_part(cos_
integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d) + 4*b^2*d^2*x^2*rea
l_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d) - 4*b^2
*c*d*x*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c
/d) + 4*b^2*c*d*x*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(
a)^2*tan(b*c/d) - 8*b^2*c*d*x*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*ta
n(a)^2*tan(b*c/d) - b^2*d^2*x^2*real_part(cos_integral(2*b*x + 2*b*c/d))*ta
n(b*x)^2*tan(b*c/d)^2 - b^2*d^2*x^2*real_part(cos_integral(-2*b*x - 2*b*c/d
))*tan(b*x)^2*tan(b*c/d)^2 + 4*b^2*c*d*x*imag_part(cos_integral(2*b*x + 2*b
*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)^2 - 4*b^2*c*d*x*imag_part(cos_integral(
-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)^2 + 8*b^2*c*d*x*sin_integra
l(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a)*tan(b*c/d)^2 + b^2*d^2*x^2*real_part
(cos_integral(2*b*x + 2*b*c/d))*tan(a)^2*tan(b*c/d)^2 + b^2*d^2*x^2*real_pa
rt(cos_integral(-2*b*x - 2*b*c/d))*tan(a)^2*tan(b*c/d)^2 + b^2*c^2*real_par
t(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 + b^2*c^2
*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d)^2
 - 2*b^2*d^2*x^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)
 + 2*b^2*d^2*x^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a
) - 4*b^2*d^2*x^2*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a) - 2*b^2
*c*d*x*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)^2 - 2*b^2
*c*d*x*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)^2 + 2*b^
2*d^2*x^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(b*c/d) -
2*b^2*d^2*x^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(b*c/
d) + 4*b^2*d^2*x^2*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(b*c/d) +
8*b^2*c*d*x*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)*tan(
b*c/d) + 8*b^2*c*d*x*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*t
an(a)*tan(b*c/d) - 2*b^2*d^2*x^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*t
an(a)^2*tan(b*c/d) + 2*b^2*d^2*x^2*imag_part(cos_integral(-2*b*x - 2*b*c/d)
)*tan(a)^2*tan(b*c/d) - 4*b^2*d^2*x^2*sin_integral(2*(b*d*x + b*c)/d)*tan(a
)^2*tan(b*c/d) - 2*b^2*c^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x
)^2*tan(a)^2*tan(b*c/d) + 2*b^2*c^2*imag_part(cos_integral(-2*b*x - 2*b*c/d
))*tan(b*x)^2*tan(a)^2*tan(b*c/d) - 4*b^2*c^2*sin_integral(2*(b*d*x + b*c)/
d)*tan(b*x)^2*tan(a)^2*tan(b*c/d) - 2*b^2*c*d*x*real_part(cos_integral(2*b*
x + 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 - 2*b^2*c*d*x*real_part(cos_integral(
-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 + 2*b^2*d^2*x^2*imag_part(cos_in
tegral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d)^2 - 2*b^2*d^2*x^2*imag_part(cos_
integral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d)^2 + 4*b^2*d^2*x^2*sin_integra
l(2*(b*d*x + b*c)/d)*tan(a)*tan(b*c/d)^2 + 2*b^2*c^2*imag_part(cos_integral
(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)^2 - 2*b^2*c^2*imag_part(cos
_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)^2 + 4*b^2*c^2*sin
_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a)*tan(b*c/d)^2 + 2*b^2*c*d*x*r
```

```
eal_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)^2*tan(b*c/d)^2 + 2*b^2*c*d*x
*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)^2*tan(b*c/d)^2 + b^2*d^2*
x^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2 + b^2*d^2*x^2*real_
part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2 - 4*b^2*c*d*x*imag_part(cos
_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a) + 4*b^2*c*d*x*imag_part(cos_i
ntegral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a) - 8*b^2*c*d*x*sin_integral(2*(
b*d*x + b*c)/d)*tan(b*x)^2*tan(a) - b^2*d^2*x^2*real_part(cos_integral(2*b*
x + 2*b*c/d))*tan(a)^2 - b^2*d^2*x^2*real_part(cos_integral(-2*b*x - 2*b*c/
d))*tan(a)^2 - b^2*c^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*
tan(a)^2 - b^2*c^2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan
(a)^2 + 4*b^2*c*d*x*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan
(b*c/d) - 4*b^2*c*d*x*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*
tan(b*c/d) + 8*b^2*c*d*x*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(b*c
/d) + 4*b^2*d^2*x^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c
/d) + 4*b^2*d^2*x^2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*
c/d) + 4*b^2*c^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)
*tan(b*c/d) + 4*b^2*c^2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^
2*tan(a)*tan(b*c/d) - 4*b^2*c*d*x*imag_part(cos_integral(2*b*x + 2*b*c/d))*
tan(a)^2*tan(b*c/d) + 4*b^2*c*d*x*imag_part(cos_integral(-2*b*x - 2*b*c/d))
*tan(a)^2*tan(b*c/d) - 8*b^2*c*d*x*sin_integral(2*(b*d*x + b*c)/d)*tan(a)^2
*tan(b*c/d) - b^2*d^2*x^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*c/
d)^2 - b^2*d^2*x^2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*c/d)^2 -
 b^2*c^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 -
 b^2*c^2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2
+ 4*b^2*c*d*x*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d)^2
- 4*b^2*c*d*x*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d)^2
 + 8*b^2*c*d*x*sin_integral(2*(b*d*x + b*c)/d)*tan(a)*tan(b*c/d)^2 + 2*b*d^
2*x*tan(b*x)^2*tan(a)*tan(b*c/d)^2 + b^2*c^2*real_part(cos_integral(2*b*x +
 2*b*c/d))*tan(a)^2*tan(b*c/d)^2 + b^2*c^2*real_part(cos_integral(-2*b*x -
2*b*c/d))*tan(a)^2*tan(b*c/d)^2 + 2*b*d^2*x*tan(b*x)*tan(a)^2*tan(b*c/d)^2
+ 2*b^2*c*d*x*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2 + 2*b^2*c
*d*x*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2 - 2*b^2*d^2*x^2*i
mag_part(cos_integral(2*b*x + 2*b*c/d))*tan(a) + 2*b^2*d^2*x^2*imag_part(co
s_integral(-2*b*x - 2*b*c/d))*tan(a) - 4*b^2*d^2*x^2*sin_integral(2*(b*d*x
+ b*c)/d)*tan(a) - 2*b^2*c^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b
*x)^2*tan(a) + 2*b^2*c^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)
^2*tan(a) - 4*b^2*c^2*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a) - 2
*b^2*c*d*x*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)^2 - 2*b^2*c*d*x*
real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)^2 + 2*b^2*d^2*x^2*imag_par
t(cos_integral(2*b*x + 2*b*c/d))*tan(b*c/d) - 2*b^2*d^2*x^2*imag_part(cos_i
ntegral(-2*b*x - 2*b*c/d))*tan(b*c/d) + 4*b^2*d^2*x^2*sin_integral(2*(b*d*x
 + b*c)/d)*tan(b*c/d) + 2*b^2*c^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*
tan(b*x)^2*tan(b*c/d) - 2*b^2*c^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))
*tan(b*x)^2*tan(b*c/d) + 4*b^2*c^2*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)
^2*tan(b*c/d) + 8*b^2*c*d*x*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)
```

```
*tan(b*c/d) + 8*b^2*c*d*x*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)*
tan(b*c/d) - 2*b^2*c^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)^2*ta
n(b*c/d) + 2*b^2*c^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)^2*tan
(b*c/d) - 4*b^2*c^2*sin_integral(2*(b*d*x + b*c)/d)*tan(a)^2*tan(b*c/d) - 2
*b^2*c*d*x*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*c/d)^2 - 2*b^2*c*
d*x*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*c/d)^2 + 2*b^2*c^2*imag
_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d)^2 - 2*b^2*c^2*imag_p
art(cos_integral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d)^2 + 4*b^2*c^2*sin_int
egral(2*(b*d*x + b*c)/d)*tan(a)*tan(b*c/d)^2 + 2*b*c*d*tan(b*x)^2*tan(a)*ta
n(b*c/d)^2 + 2*b*c*d*tan(b*x)*tan(a)^2*tan(b*c/d)^2 + b^2*d^2*x^2*real_part
(cos_integral(2*b*x + 2*b*c/d)) + b^2*d^2*x^2*real_part(cos_integral(-2*b*x
 - 2*b*c/d)) + b^2*c^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2
+ b^2*c^2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2 - 4*b^2*c*d*
x*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(a) + 4*b^2*c*d*x*imag_part(c
os_integral(-2*b*x - 2*b*c/d))*tan(a) - 8*b^2*c*d*x*sin_integral(2*(b*d*x +
 b*c)/d)*tan(a) + 2*b*d^2*x*tan(b*x)^2*tan(a) - b^2*c^2*real_part(cos_integ
ral(2*b*x + 2*b*c/d))*tan(a)^2 - b^2*c^2*real_part(cos_integral(-2*b*x - 2*
b*c/d))*tan(a)^2 + 2*b*d^2*x*tan(b*x)*tan(a)^2 + 4*b^2*c*d*x*imag_part(cos_
integral(2*b*x + 2*b*c/d))*tan(b*c/d) - 4*b^2*c*d*x*imag_part(cos_integral(
-2*b*x - 2*b*c/d))*tan(b*c/d) + 8*b^2*c*d*x*sin_integral(2*(b*d*x + b*c)/d)
*tan(b*c/d) + 4*b^2*c^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)*tan
(b*c/d) + 4*b^2*c^2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*
c/d) - b^2*c^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*c/d)^2 - b^2*
c^2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*c/d)^2 - 2*b*d^2*x*tan(
b*x)*tan(b*c/d)^2 - 2*b*d^2*x*tan(a)*tan(b*c/d)^2 + 2*b^2*c*d*x*real_part(c
os_integral(2*b*x + 2*b*c/d)) + 2*b^2*c*d*x*real_part(cos_integral(-2*b*x -
 2*b*c/d)) - 2*b^2*c^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(a) + 2*
b^2*c^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a) - 4*b^2*c^2*sin_in
tegral(2*(b*d*x + b*c)/d)*tan(a) + 2*b*c*d*tan(b*x)^2*tan(a) + 2*b*c*d*tan(
b*x)*tan(a)^2 + 2*b^2*c^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*c/
d) - 2*b^2*c^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*c/d) + 4*b^2
*c^2*sin_integral(2*(b*d*x + b*c)/d)*tan(b*c/d) - 2*b*c*d*tan(b*x)*tan(b*c/
d)^2 - d^2*tan(b*x)^2*tan(b*c/d)^2 - 2*b*c*d*tan(a)*tan(b*c/d)^2 - 2*d^2*ta
n(b*x)*tan(a)*tan(b*c/d)^2 - d^2*tan(a)^2*tan(b*c/d)^2 + b^2*c^2*real_part(
cos_integral(2*b*x + 2*b*c/d)) + b^2*c^2*real_part(cos_integral(-2*b*x - 2*
b*c/d)) - 2*b*d^2*x*tan(b*x) - 2*b*d^2*x*tan(a) - 2*b*c*d*tan(b*x) - d^2*ta
n(b*x)^2 - 2*b*c*d*tan(a) - 2*d^2*tan(b*x)*tan(a) - d^2*tan(a)^2)/(d^5*x^2*
tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 + 2*c*d^4*x*tan(b*x)^2*tan(a)^2*tan(b*c/d)
^2 + d^5*x^2*tan(b*x)^2*tan(a)^2 + d^5*x^2*tan(b*x)^2*tan(b*c/d)^2 + d^5*x^
2*tan(a)^2*tan(b*c/d)^2 + c^2*d^3*tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 + 2*c*d^
4*x*tan(b*x)^2*tan(a)^2 + 2*c*d^4*x*tan(b*x)^2*tan(b*c/d)^2 + 2*c*d^4*x*tan
(a)^2*tan(b*c/d)^2 + d^5*x^2*tan(b*x)^2 + d^5*x^2*tan(a)^2 + c^2*d^3*tan(b*
x)^2*tan(a)^2 + d^5*x^2*tan(b*c/d)^2 + c^2*d^3*tan(b*x)^2*tan(b*c/d)^2 + c^
2*d^3*tan(a)^2*tan(b*c/d)^2 + 2*c*d^4*x*tan(b*x)^2 + 2*c*d^4*x*tan(a)^2 + 2
*c*d^4*x*tan(b*c/d)^2 + d^5*x^2 + c^2*d^3*tan(b*x)^2 + c^2*d^3*tan(a)^2 + c
```

```
^2*d^3*tan(b*c/d)^2 + 2*c*d^4*x + c^2*d^3)
```

maple [A] time = 0.02, size = 193, normalized size = 1.71

$$\frac{-\frac{b^3}{4((bx+a)d-da+cb)^2 d} - \frac{b^3\left(-\frac{\cos(2bx+2a)}{((bx+a)d-da+cb)^2 d} - \frac{-\frac{2\sin(2bx+2a)}{((bx+a)d-da+cb)d} + \frac{\frac{4\,\mathrm{Si}\left(2bx+2a+\frac{-2da+2cb}{d}\right)\sin\left(\frac{-2da+2cb}{d}\right)}{d} + \frac{4\,\mathrm{Ci}\left(2bx+2a+\frac{-2da+2cb}{d}\right)\cos\left(\frac{-2da+2cb}{d}\right)}{d}}{d}}{d}\right)}{4}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*x+c)^3,x)
```

```
[Out] 1/b*(-1/4*b^3/((b*x+a)*d-d*a+c*b)^2/d-1/4*b^3*(-cos(2*b*x+2*a)/((b*x+a)*d-d
*a+c*b)^2/d-(-2*sin(2*b*x+2*a)/((b*x+a)*d-d*a+c*b)/d+2*(2*Si(2*b*x+2*a+2*(-
a*d+b*c)/d)*sin(2*(-a*d+b*c)/d)/d+2*Ci(2*b*x+2*a+2*(-a*d+b*c)/d)*cos(2*(-a*
d+b*c)/d)/d)/d)/d))
```

maxima [C] time = 0.77, size = 206, normalized size = 1.82

$$\frac{16\,b^3\left(E_3\left(\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)+E_3\left(-\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)\right)\cos\left(-\frac{2\,(bc-ad)}{d}\right)-b^3\left(16i\,E_3\left(\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)-16i\,E_3\left(\cdots\right)\right)}{64\left(b^2c^2d-2\,abcd^2+(bx+a)^2d^3+a^2d^3+2\left(bcd^2-ad^3\right)(bx+a)\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^3,x, algorithm="maxima")
```

```
[Out] 1/64*(16*b^3*(exp_integral_e(3, (2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d) +
exp_integral_e(3, -(2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d))*cos(-2*(b*c -
a*d)/d) - b^3*(16*I*exp_integral_e(3, (2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)
/d) - 16*I*exp_integral_e(3, -(2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d))*sin
(-2*(b*c - a*d)/d) - 16*b^3)/((b^2*c^2*d - 2*a*b*c*d^2 + (b*x + a)^2*d^3 +
a^2*d^3 + 2*(b*c*d^2 - a*d^3)*(b*x + a))*b)
```

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

$$\int \frac{\sin\left(a+b\,x\right)^2}{\left(c+d\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(c + d*x)^3,x)
```

```
[Out] int(sin(a + b*x)^2/(c + d*x)^3, x)
```

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

$$\int \frac{\sin^2(a+bx)}{(c+dx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*x+c)**3,x)
```

```
[Out] Integral(sin(a + b*x)**2/(c + d*x)**3, x)
```

3.15 $\int \frac{\sin^2(a+bx)}{(c+dx)^4} dx$

Optimal. Leaf size=162

$$-\frac{2b^3 \sin\left(2a-\frac{2bc}{d}\right) \text{Ci}\left(\frac{2bc}{d}+2bx\right)}{3d^4}-\frac{2b^3 \cos\left(2a-\frac{2bc}{d}\right) \text{Si}\left(\frac{2bc}{d}+2bx\right)}{3d^4}+\frac{2b^2 \sin^2(a+bx)}{3d^3(c+dx)}-\frac{b \sin(a+bx) \cos(a+bx}{3d^2(c+dx)^2}$$

```
[Out] -1/3*b^2/d^3/(d*x+c)-2/3*b^3*cos(2*a-2*b*c/d)*Si(2*b*c/d+2*b*x)/d^4-2/3*b^3
*Ci(2*b*c/d+2*b*x)*sin(2*a-2*b*c/d)/d^4-1/3*b*cos(b*x+a)*sin(b*x+a)/d^2/(d*
x+c)^2-1/3*sin(b*x+a)^2/d/(d*x+c)^3+2/3*b^2*sin(b*x+a)^2/d^3/(d*x+c)
```

Rubi [A] time = 0.18, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {3314, 32, 3313, 12, 3303, 3299, 3302}

$$-\frac{2b^3 \sin\left(2a-\frac{2bc}{d}\right) \text{CosIntegral}\left(\frac{2bc}{d}+2bx\right)}{3d^4}-\frac{2b^3 \cos\left(2a-\frac{2bc}{d}\right) \text{Si}\left(\frac{2bc}{d}+2bx\right)}{3d^4}+\frac{2b^2 \sin^2(a+bx)}{3d^3(c+dx)}-\frac{b \sin(a+bx)}{3d^2(c+}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2/(c + d*x)^4,x]
```

```
[Out] -b^2/(3*d^3*(c + d*x)) - (2*b^3*CosIntegral[(2*b*c)/d + 2*b*x]*Sin[2*a - (2
*b*c)/d])/(3*d^4) - (b*Cos[a + b*x]*Sin[a + b*x])/(3*d^2*(c + d*x)^2) - Sin
[a + b*x]^2/(3*d*(c + d*x)^3) + (2*b^2*Sin[a + b*x]^2)/(3*d^3*(c + d*x)) -
(2*b^3*Cos[2*a - (2*b*c)/d]*SinIntegral[(2*b*c)/d + 2*b*x])/(3*d^4)
```

Rule 12

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

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rubi steps

$$\int \frac{\sin^2(a+bx)}{(c+dx)^4}\,dx = -\frac{b\cos(a+bx)\sin(a+bx)}{3d^2(c+dx)^2} - \frac{\sin^2(a+bx)}{3d(c+dx)^3} + \frac{b^2\int\frac{1}{(c+dx)^2}\,dx}{3d^2} - \frac{\left(2b^2\right)\int\frac{\sin^2(a+bx)}{(c+dx)^2}\,dx}{3d^2}$$

$$= -\frac{b^2}{3d^3(c+dx)} - \frac{b\cos(a+bx)\sin(a+bx)}{3d^2(c+dx)^2} - \frac{\sin^2(a+bx)}{3d(c+dx)^3} + \frac{2b^2\sin^2(a+bx)}{3d^3(c+dx)} - \frac{\left(4b^3\right)\int\frac{\sin(2}{2(c}$$

$$= -\frac{b^2}{3d^3(c+dx)} - \frac{b\cos(a+bx)\sin(a+bx)}{3d^2(c+dx)^2} - \frac{\sin^2(a+bx)}{3d(c+dx)^3} + \frac{2b^2\sin^2(a+bx)}{3d^3(c+dx)} - \frac{\left(2b^3\right)\int\frac{\sin(2}{c}}{3d^3}$$

$$= -\frac{b^2}{3d^3(c+dx)} - \frac{b\cos(a+bx)\sin(a+bx)}{3d^2(c+dx)^2} - \frac{\sin^2(a+bx)}{3d(c+dx)^3} + \frac{2b^2\sin^2(a+bx)}{3d^3(c+dx)} - \frac{\left(2b^3\cos\left(2a\right.\right.}{}$$

$$= -\frac{b^2}{3d^3(c+dx)} - \frac{2b^3\operatorname{Ci}\left(\frac{2bc}{d}+2bx\right)\sin\left(2a-\frac{2bc}{d}\right)}{3d^4} - \frac{b\cos(a+bx)\sin(a+bx)}{3d^2(c+dx)^2} - \frac{\sin^2(a+bx)}{3d(c+dx)^3}$$

Mathematica [A] time = 1.24, size = 122, normalized size = 0.75

$$-\frac{4b^3\sin\left(2a-\frac{2bc}{d}\right)\operatorname{Ci}\left(\frac{2b(c+dx)}{d}\right) + 4b^3\cos\left(2a-\frac{2bc}{d}\right)\operatorname{Si}\left(\frac{2b(c+dx)}{d}\right) + \frac{d\left(\cos(2(a+bx))\left(2b^2(c+dx)^2-d^2\right)+d(b(c+dx)\sin(2(a+bx))+d\right.}{(c+dx)^3}}{6d^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2/(c + d*x)^4,x]
```

```
[Out] -1/6*(4*b^3*CosIntegral[(2*b*(c + d*x))/d]*Sin[2*a - (2*b*c)/d] + (d*((-d^2
 + 2*b^2*(c + d*x)^2)*Cos[2*(a + b*x)] + d*(d + b*(c + d*x)*Sin[2*(a + b*x)
])))/(c + d*x)^3 + 4*b^3*Cos[2*a - (2*b*c)/d]*SinIntegral[(2*b*(c + d*x))/d
])/d^4
```

fricas [B] time = 0.94, size = 341, normalized size = 2.10

$$\frac{b^2d^3x^2 + 2\,b^2cd^2x + b^2c^2d - d^3 - \left(2\,b^2d^3x^2 + 4\,b^2cd^2x + 2\,b^2c^2d - d^3\right)\cos\left(bx+a\right)^2 - \left(bd^3x + bcd^2\right)\cos\left(bx+a\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^4,x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - d^3 - (2*b^2*d^3*x^2 + 4*b^2
*c*d^2*x + 2*b^2*c^2*d - d^3)*cos(b*x + a)^2 - (b*d^3*x + b*c*d^2)*cos(b*x
```

```
+ a)*sin(b*x + a) - 2*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*
c^3)*cos(-2*(b*c - a*d)/d)*sin_integral(2*(b*d*x + b*c)/d) - ((b^3*d^3*x^3
+ 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*cos_integral(2*(b*d*x + b*c)/d
) + (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*cos_integral(
-2*(b*d*x + b*c)/d))*sin(-2*(b*c - a*d)/d))/(d^7*x^3 + 3*c*d^6*x^2 + 3*c^2*
d^5*x + c^3*d^4)
```

giac [C] time = 1.51, size = 7832, normalized size = 48.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^4,x, algorithm="giac")
```

```
[Out] -1/3*(b^3*d^3*x^3*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a
)^2*tan(b*c/d)^2 - b^3*d^3*x^3*imag_part(cos_integral(-2*b*x - 2*b*c/d))*ta
n(b*x)^2*tan(a)^2*tan(b*c/d)^2 + 2*b^3*d^3*x^3*sin_integral(2*(b*d*x + b*c)
/d)*tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 + 2*b^3*d^3*x^3*real_part(cos_integral
(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d) + 2*b^3*d^3*x^3*real_part
(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d) - 2*b^3*d^3
*x^3*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)^
2 - 2*b^3*d^3*x^3*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(
a)*tan(b*c/d)^2 + 3*b^3*c*d^2*x^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*
tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 - 3*b^3*c*d^2*x^2*imag_part(cos_integral(-
2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 + 6*b^3*c*d^2*x^2*sin_in
tegral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 - b^3*d^3*x^3*im
ag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)^2 + b^3*d^3*x^3*im
ag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)^2 - 2*b^3*d^3*x^3
*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a)^2 + 4*b^3*d^3*x^3*imag_p
art(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d) - 4*b^3*d^3
*x^3*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)
 + 8*b^3*d^3*x^3*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a)*tan(b*c/
d) + 6*b^3*c*d^2*x^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*ta
n(a)^2*tan(b*c/d) + 6*b^3*c*d^2*x^2*real_part(cos_integral(-2*b*x - 2*b*c/d
))*tan(b*x)^2*tan(a)^2*tan(b*c/d) - b^3*d^3*x^3*imag_part(cos_integral(2*b*
x + 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 + b^3*d^3*x^3*imag_part(cos_integral(
-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 - 2*b^3*d^3*x^3*sin_integral(2*(
b*d*x + b*c)/d)*tan(b*x)^2*tan(b*c/d)^2 - 6*b^3*c*d^2*x^2*real_part(cos_int
egral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)^2 - 6*b^3*c*d^2*x^2*re
al_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)^2 + b^
3*d^3*x^3*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)^2*tan(b*c/d)^2 -
b^3*d^3*x^3*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)^2*tan(b*c/d)^2
 + 2*b^3*d^3*x^3*sin_integral(2*(b*d*x + b*c)/d)*tan(a)^2*tan(b*c/d)^2 + 3*
b^3*c^2*d*x*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)^2*ta
n(b*c/d)^2 - 3*b^3*c^2*d*x*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*
```

```
x)^2*tan(a)^2*tan(b*c/d)^2 + 6*b^3*c^2*d*x*sin_integral(2*(b*d*x + b*c)/d)*
tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 + 2*b^3*d^3*x^3*real_part(cos_integral(2*b
*x + 2*b*c/d))*tan(b*x)^2*tan(a) + 2*b^3*d^3*x^3*real_part(cos_integral(-2*
b*x - 2*b*c/d))*tan(b*x)^2*tan(a) - 3*b^3*c*d^2*x^2*imag_part(cos_integral(
2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)^2 + 3*b^3*c*d^2*x^2*imag_part(cos_integ
ral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)^2 - 6*b^3*c*d^2*x^2*sin_integral(2
*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a)^2 - 2*b^3*d^3*x^3*real_part(cos_integra
l(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(b*c/d) - 2*b^3*d^3*x^3*real_part(cos_int
egral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(b*c/d) + 12*b^3*c*d^2*x^2*imag_part
(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d) - 12*b^3*c*d^2
*x^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)
 + 24*b^3*c*d^2*x^2*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a)*tan(b
*c/d) + 2*b^3*d^3*x^3*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)^2*tan
(b*c/d) + 2*b^3*d^3*x^3*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)^2*
tan(b*c/d) + 6*b^3*c^2*d*x*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x
)^2*tan(a)^2*tan(b*c/d) + 6*b^3*c^2*d*x*real_part(cos_integral(-2*b*x - 2*b
*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d) - 3*b^3*c*d^2*x^2*imag_part(cos_integ
ral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 + 3*b^3*c*d^2*x^2*imag_part(c
os_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 - 6*b^3*c*d^2*x^2*si
n_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(b*c/d)^2 - 2*b^3*d^3*x^3*real_
part(cos_integral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d)^2 - 2*b^3*d^3*x^3*rea
l_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d)^2 - 6*b^3*c^2*d*x*
real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d)^2 - 6
*b^3*c^2*d*x*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)*ta
n(b*c/d)^2 + 3*b^3*c*d^2*x^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(a
)^2*tan(b*c/d)^2 - 3*b^3*c*d^2*x^2*imag_part(cos_integral(-2*b*x - 2*b*c/d)
)*tan(a)^2*tan(b*c/d)^2 + 6*b^3*c*d^2*x^2*sin_integral(2*(b*d*x + b*c)/d)*t
an(a)^2*tan(b*c/d)^2 + b^2*d^3*x^2*tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 + b^3*c
^3*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d)^
2 - b^3*c^3*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)^2*t
an(b*c/d)^2 + 2*b^3*c^3*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a)^2
*tan(b*c/d)^2 + b^3*d^3*x^3*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*
x)^2 - b^3*d^3*x^3*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2 + 2
*b^3*d^3*x^3*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2 + 6*b^3*c*d^2*x^2*r
eal_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a) + 6*b^3*c*d^2*x^2
*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a) - b^3*d^3*x^3*
imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)^2 + b^3*d^3*x^3*imag_part(c
os_integral(-2*b*x - 2*b*c/d))*tan(a)^2 - 2*b^3*d^3*x^3*sin_integral(2*(b*d
*x + b*c)/d)*tan(a)^2 - 3*b^3*c^2*d*x*imag_part(cos_integral(2*b*x + 2*b*c/
d))*tan(b*x)^2*tan(a)^2 + 3*b^3*c^2*d*x*imag_part(cos_integral(-2*b*x - 2*b
*c/d))*tan(b*x)^2*tan(a)^2 - 6*b^3*c^2*d*x*sin_integral(2*(b*d*x + b*c)/d)*
tan(b*x)^2*tan(a)^2 - 6*b^3*c*d^2*x^2*real_part(cos_integral(2*b*x + 2*b*c/
d))*tan(b*x)^2*tan(b*c/d) - 6*b^3*c*d^2*x^2*real_part(cos_integral(-2*b*x -
 2*b*c/d))*tan(b*x)^2*tan(b*c/d) + 4*b^3*d^3*x^3*imag_part(cos_integral(2*b
*x + 2*b*c/d))*tan(a)*tan(b*c/d) - 4*b^3*d^3*x^3*imag_part(cos_integral(-2*
```

```
b*x - 2*b*c/d))*tan(a)*tan(b*c/d) + 8*b^3*d^3*x^3*sin_integral(2*(b*d*x + b
*c)/d)*tan(a)*tan(b*c/d) + 12*b^3*c^2*d*x*imag_part(cos_integral(2*b*x + 2*
b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d) - 12*b^3*c^2*d*x*imag_part(cos_integra
l(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*c/d) + 24*b^3*c^2*d*x*sin_inte
gral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(a)*tan(b*c/d) + 6*b^3*c*d^2*x^2*real
_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)^2*tan(b*c/d) + 6*b^3*c*d^2*x^2*
real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)^2*tan(b*c/d) + 2*b^3*c^3*r
eal_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b*c/d) + 2*
b^3*c^3*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a)^2*tan(b
*c/d) - b^3*d^3*x^3*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*c/d)^2 +
 b^3*d^3*x^3*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*c/d)^2 - 2*b^3
*d^3*x^3*sin_integral(2*(b*d*x + b*c)/d)*tan(b*c/d)^2 - 3*b^3*c^2*d*x*imag_
part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 + 3*b^3*c^2*d*x
*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 - 6*b^3*
c^2*d*x*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(b*c/d)^2 - 6*b^3*c*d
^2*x^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d)^2 - 6*b^3
*c*d^2*x^2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d)^2 -
2*b^3*c^3*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a)*tan(b*
c/d)^2 - 2*b^3*c^3*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan
(a)*tan(b*c/d)^2 + 3*b^3*c^2*d*x*imag_part(cos_integral(2*b*x + 2*b*c/d))*t
an(a)^2*tan(b*c/d)^2 - 3*b^3*c^2*d*x*imag_part(cos_integral(-2*b*x - 2*b*c/
d))*tan(a)^2*tan(b*c/d)^2 + 6*b^3*c^2*d*x*sin_integral(2*(b*d*x + b*c)/d)*t
an(a)^2*tan(b*c/d)^2 + 2*b^2*c*d^2*x*tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 + 3*b
^3*c*d^2*x^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2 - 3*b^3*c*
d^2*x^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2 + 6*b^3*c*d^2*
x^2*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2 + 2*b^3*d^3*x^3*real_part(co
s_integral(2*b*x + 2*b*c/d))*tan(a) + 2*b^3*d^3*x^3*real_part(cos_integral(
-2*b*x - 2*b*c/d))*tan(a) + 6*b^3*c^2*d*x*real_part(cos_integral(2*b*x + 2*
b*c/d))*tan(b*x)^2*tan(a) + 6*b^3*c^2*d*x*real_part(cos_integral(-2*b*x - 2
*b*c/d))*tan(b*x)^2*tan(a) - 3*b^3*c*d^2*x^2*imag_part(cos_integral(2*b*x +
 2*b*c/d))*tan(a)^2 + 3*b^3*c*d^2*x^2*imag_part(cos_integral(-2*b*x - 2*b*c
/d))*tan(a)^2 - 6*b^3*c*d^2*x^2*sin_integral(2*(b*d*x + b*c)/d)*tan(a)^2 +
b^2*d^3*x^2*tan(b*x)^2*tan(a)^2 - b^3*c^3*imag_part(cos_integral(2*b*x + 2*
b*c/d))*tan(b*x)^2*tan(a)^2 + b^3*c^3*imag_part(cos_integral(-2*b*x - 2*b*c
/d))*tan(b*x)^2*tan(a)^2 - 2*b^3*c^3*sin_integral(2*(b*d*x + b*c)/d)*tan(b*
x)^2*tan(a)^2 - 2*b^3*d^3*x^3*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(
b*c/d) - 2*b^3*d^3*x^3*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*c/d)
 - 6*b^3*c^2*d*x*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(b*
c/d) - 6*b^3*c^2*d*x*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^2*t
an(b*c/d) + 12*b^3*c*d^2*x^2*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(a
)*tan(b*c/d) - 12*b^3*c*d^2*x^2*imag_part(cos_integral(-2*b*x - 2*b*c/d))*t
an(a)*tan(b*c/d) + 24*b^3*c*d^2*x^2*sin_integral(2*(b*d*x + b*c)/d)*tan(a)*
tan(b*c/d) + 4*b^3*c^3*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*
tan(a)*tan(b*c/d) - 4*b^3*c^3*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan
(b*x)^2*tan(a)*tan(b*c/d) + 8*b^3*c^3*sin_integral(2*(b*d*x + b*c)/d)*tan(b
```

```
*x)^2*tan(a)*tan(b*c/d) + 6*b^3*c^2*d*x*real_part(cos_integral(2*b*x + 2*b*
c/d))*tan(a)^2*tan(b*c/d) + 6*b^3*c^2*d*x*real_part(cos_integral(-2*b*x - 2
*b*c/d))*tan(a)^2*tan(b*c/d) - 3*b^3*c*d^2*x^2*imag_part(cos_integral(2*b*x
 + 2*b*c/d))*tan(b*c/d)^2 + 3*b^3*c*d^2*x^2*imag_part(cos_integral(-2*b*x -
 2*b*c/d))*tan(b*c/d)^2 - 6*b^3*c*d^2*x^2*sin_integral(2*(b*d*x + b*c)/d)*t
an(b*c/d)^2 - b^2*d^3*x^2*tan(b*x)^2*tan(b*c/d)^2 - b^3*c^3*imag_part(cos_i
ntegral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 + b^3*c^3*imag_part(cos_i
ntegral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(b*c/d)^2 - 2*b^3*c^3*sin_integral
(2*(b*d*x + b*c)/d)*tan(b*x)^2*tan(b*c/d)^2 - 6*b^3*c^2*d*x*real_part(cos_i
ntegral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d)^2 - 6*b^3*c^2*d*x*real_part(cos
_integral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d)^2 - 4*b^2*d^3*x^2*tan(b*x)*t
an(a)*tan(b*c/d)^2 - b^2*d^3*x^2*tan(a)^2*tan(b*c/d)^2 + b^3*c^3*imag_part(
cos_integral(2*b*x + 2*b*c/d))*tan(a)^2*tan(b*c/d)^2 - b^3*c^3*imag_part(co
s_integral(-2*b*x - 2*b*c/d))*tan(a)^2*tan(b*c/d)^2 + 2*b^3*c^3*sin_integra
l(2*(b*d*x + b*c)/d)*tan(a)^2*tan(b*c/d)^2 + b^2*c^2*d*tan(b*x)^2*tan(a)^2*
tan(b*c/d)^2 + b^3*d^3*x^3*imag_part(cos_integral(2*b*x + 2*b*c/d)) - b^3*d
^3*x^3*imag_part(cos_integral(-2*b*x - 2*b*c/d)) + 2*b^3*d^3*x^3*sin_integr
al(2*(b*d*x + b*c)/d) + 3*b^3*c^2*d*x*imag_part(cos_integral(2*b*x + 2*b*c/
d))*tan(b*x)^2 - 3*b^3*c^2*d*x*imag_part(cos_integral(-2*b*x - 2*b*c/d))*ta
n(b*x)^2 + 6*b^3*c^2*d*x*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2 + 6*b^3
*c*d^2*x^2*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(a) + 6*b^3*c*d^2*x^
2*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a) + 2*b^3*c^3*real_part(co
s_integral(2*b*x + 2*b*c/d))*tan(b*x)^2*tan(a) + 2*b^3*c^3*real_part(cos_in
tegral(-2*b*x - 2*b*c/d))*tan(b*x)^2*tan(a) - 3*b^3*c^2*d*x*imag_part(cos_i
ntegral(2*b*x + 2*b*c/d))*tan(a)^2 + 3*b^3*c^2*d*x*imag_part(cos_integral(-
2*b*x - 2*b*c/d))*tan(a)^2 - 6*b^3*c^2*d*x*sin_integral(2*(b*d*x + b*c)/d)*
tan(a)^2 + 2*b^2*c*d^2*x*tan(b*x)^2*tan(a)^2 - 6*b^3*c*d^2*x^2*real_part(co
s_integral(2*b*x + 2*b*c/d))*tan(b*c/d) - 6*b^3*c*d^2*x^2*real_part(cos_int
egral(-2*b*x - 2*b*c/d))*tan(b*c/d) - 2*b^3*c^3*real_part(cos_integral(2*b*
x + 2*b*c/d))*tan(b*x)^2*tan(b*c/d) - 2*b^3*c^3*real_part(cos_integral(-2*b
*x - 2*b*c/d))*tan(b*x)^2*tan(b*c/d) + 12*b^3*c^2*d*x*imag_part(cos_integra
l(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d) - 12*b^3*c^2*d*x*imag_part(cos_integr
al(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d) + 24*b^3*c^2*d*x*sin_integral(2*(b*
d*x + b*c)/d)*tan(a)*tan(b*c/d) + 2*b^3*c^3*real_part(cos_integral(2*b*x +
2*b*c/d))*tan(a)^2*tan(b*c/d) + 2*b^3*c^3*real_part(cos_integral(-2*b*x - 2
*b*c/d))*tan(a)^2*tan(b*c/d) - 3*b^3*c^2*d*x*imag_part(cos_integral(2*b*x +
 2*b*c/d))*tan(b*c/d)^2 + 3*b^3*c^2*d*x*imag_part(cos_integral(-2*b*x - 2*b
*c/d))*tan(b*c/d)^2 - 6*b^3*c^2*d*x*sin_integral(2*(b*d*x + b*c)/d)*tan(b*c
/d)^2 - 2*b^2*c*d^2*x*tan(b*x)^2*tan(b*c/d)^2 - 2*b^3*c^3*real_part(cos_int
egral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d)^2 - 2*b^3*c^3*real_part(cos_integ
ral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d)^2 - 8*b^2*c*d^2*x*tan(b*x)*tan(a)*
tan(b*c/d)^2 - b*d^3*x*tan(b*x)^2*tan(a)*tan(b*c/d)^2 - 2*b^2*c*d^2*x*tan(a
)^2*tan(b*c/d)^2 - b*d^3*x*tan(b*x)*tan(a)^2*tan(b*c/d)^2 + 3*b^3*c*d^2*x^2
*imag_part(cos_integral(2*b*x + 2*b*c/d)) - 3*b^3*c*d^2*x^2*imag_part(cos_i
ntegral(-2*b*x - 2*b*c/d)) + 6*b^3*c*d^2*x^2*sin_integral(2*(b*d*x + b*c)/d
```

```
) - b^2*d^3*x^2*tan(b*x)^2 + b^3*c^3*imag_part(cos_integral(2*b*x + 2*b*c/d
))*tan(b*x)^2 - b^3*c^3*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*x)^
2 + 2*b^3*c^3*sin_integral(2*(b*d*x + b*c)/d)*tan(b*x)^2 + 6*b^3*c^2*d*x*re
al_part(cos_integral(2*b*x + 2*b*c/d))*tan(a) + 6*b^3*c^2*d*x*real_part(cos
_integral(-2*b*x - 2*b*c/d))*tan(a) - 4*b^2*d^3*x^2*tan(b*x)*tan(a) - b^2*d
^3*x^2*tan(a)^2 - b^3*c^3*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)^2
 + b^3*c^3*imag_part(cos_integral(-2*b*x - 2*b*c/d))*tan(a)^2 - 2*b^3*c^3*s
in_integral(2*(b*d*x + b*c)/d)*tan(a)^2 + b^2*c^2*d*tan(b*x)^2*tan(a)^2 - 6
*b^3*c^2*d*x*real_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*c/d) - 6*b^3*c^
2*d*x*real_part(cos_integral(-2*b*x - 2*b*c/d))*tan(b*c/d) + 4*b^3*c^3*imag
_part(cos_integral(2*b*x + 2*b*c/d))*tan(a)*tan(b*c/d) - 4*b^3*c^3*imag_par
t(cos_integral(-2*b*x - 2*b*c/d))*tan(a)*tan(b*c/d) + 8*b^3*c^3*sin_integra
l(2*(b*d*x + b*c)/d)*tan(a)*tan(b*c/d) + b^2*d^3*x^2*tan(b*c/d)^2 - b^3*c^3
*imag_part(cos_integral(2*b*x + 2*b*c/d))*tan(b*c/d)^2 + b^3*c^3*imag_part(
cos_integral(-2*b*x - 2*b*c/d))*tan(b*c/d)^2 - 2*b^3*c^3*sin_integral(2*(b*
d*x + b*c)/d)*tan(b*c/d)^2 - b^2*c^2*d*tan(b*x)^2*tan(b*c/d)^2 - 4*b^2*c^2*
d*tan(b*x)*tan(a)*tan(b*c/d)^2 - b*c*d^2*tan(b*x)^2*tan(a)*tan(b*c/d)^2 - b
^2*c^2*d*tan(a)^2*tan(b*c/d)^2 - b*c*d^2*tan(b*x)*tan(a)^2*tan(b*c/d)^2 + 3
*b^3*c^2*d*x*imag_part(cos_integral(2*b*x + 2*b*c/d)) - 3*b^3*c^2*d*x*imag_
part(cos_integral(-2*b*x - 2*b*c/d)) + 6*b^3*c^2*d*x*sin_integral(2*(b*d*x
+ b*c)/d) - 2*b^2*c*d^2*x*tan(b*x)^2 + 2*b^3*c^3*real_part(cos_integral(2*b
*x + 2*b*c/d))*tan(a) + 2*b^3*c^3*real_part(cos_integral(-2*b*x - 2*b*c/d))
*tan(a) - 8*b^2*c*d^2*x*tan(b*x)*tan(a) - b*d^3*x*tan(b*x)^2*tan(a) - 2*b^2
*c*d^2*x*tan(a)^2 - b*d^3*x*tan(b*x)*tan(a)^2 - 2*b^3*c^3*real_part(cos_int
egral(2*b*x + 2*b*c/d))*tan(b*c/d) - 2*b^3*c^3*real_part(cos_integral(-2*b*
x - 2*b*c/d))*tan(b*c/d) + 2*b^2*c*d^2*x*tan(b*c/d)^2 + b*d^3*x*tan(b*x)*ta
n(b*c/d)^2 + b*d^3*x*tan(a)*tan(b*c/d)^2 + b^2*d^3*x^2 + b^3*c^3*imag_part(
cos_integral(2*b*x + 2*b*c/d)) - b^3*c^3*imag_part(cos_integral(-2*b*x - 2*
b*c/d)) + 2*b^3*c^3*sin_integral(2*(b*d*x + b*c)/d) - b^2*c^2*d*tan(b*x)^2
- 4*b^2*c^2*d*tan(b*x)*tan(a) - b*c*d^2*tan(b*x)^2*tan(a) - b^2*c^2*d*tan(a
)^2 - b*c*d^2*tan(b*x)*tan(a)^2 + b^2*c^2*d*tan(b*c/d)^2 + b*c*d^2*tan(b*x)
*tan(b*c/d)^2 + d^3*tan(b*x)^2*tan(b*c/d)^2 + b*c*d^2*tan(a)*tan(b*c/d)^2 +
 2*d^3*tan(b*x)*tan(a)*tan(b*c/d)^2 + d^3*tan(a)^2*tan(b*c/d)^2 + 2*b^2*c*d
^2*x + b*d^3*x*tan(b*x) + b*d^3*x*tan(a) + b^2*c^2*d + b*c*d^2*tan(b*x) + d
^3*tan(b*x)^2 + b*c*d^2*tan(a) + 2*d^3*tan(b*x)*tan(a) + d^3*tan(a)^2)/(d^7
*x^3*tan(b*x)^2*tan(a)^2*tan(b*c/d)^2 + 3*c*d^6*x^2*tan(b*x)^2*tan(a)^2*tan
(b*c/d)^2 + d^7*x^3*tan(b*x)^2*tan(a)^2 + d^7*x^3*tan(b*x)^2*tan(b*c/d)^2 +
 d^7*x^3*tan(a)^2*tan(b*c/d)^2 + 3*c^2*d^5*x*tan(b*x)^2*tan(a)^2*tan(b*c/d)
^2 + 3*c*d^6*x^2*tan(b*x)^2*tan(a)^2 + 3*c*d^6*x^2*tan(b*x)^2*tan(b*c/d)^2
+ 3*c*d^6*x^2*tan(a)^2*tan(b*c/d)^2 + c^3*d^4*tan(b*x)^2*tan(a)^2*tan(b*c/d
)^2 + d^7*x^3*tan(b*x)^2 + d^7*x^3*tan(a)^2 + 3*c^2*d^5*x*tan(b*x)^2*tan(a)
^2 + d^7*x^3*tan(b*c/d)^2 + 3*c^2*d^5*x*tan(b*x)^2*tan(b*c/d)^2 + 3*c^2*d^5
*x*tan(a)^2*tan(b*c/d)^2 + 3*c*d^6*x^2*tan(b*x)^2 + 3*c*d^6*x^2*tan(a)^2 +
c^3*d^4*tan(b*x)^2*tan(a)^2 + 3*c*d^6*x^2*tan(b*c/d)^2 + c^3*d^4*tan(b*x)^2
*tan(b*c/d)^2 + c^3*d^4*tan(a)^2*tan(b*c/d)^2 + d^7*x^3 + 3*c^2*d^5*x*tan(b
```

```
*x)^2 + 3*c^2*d^5*x*tan(a)^2 + 3*c^2*d^5*x*tan(b*c/d)^2 + 3*c*d^6*x^2 + c^3
*d^4*tan(b*x)^2 + c^3*d^4*tan(a)^2 + c^3*d^4*tan(b*c/d)^2 + 3*c^2*d^5*x + c
^3*d^4)
```

maple [A] time = 0.02, size = 229, normalized size = 1.41

$$\frac{-\frac{b^4}{6((bx+a)d-da+cb)^3 d} - \frac{b^4\left(-\frac{2\cos(2bx+2a)}{3((bx+a)d-da+cb)^3 d} - \frac{2\left(-\frac{\sin(2bx+2a)}{((bx+a)d-da+cb)^2 d} + \frac{-\frac{2\cos(2bx+2a)}{((bx+a)d-da+cb)d} - \frac{2\left(\frac{2\,\mathrm{Si}\left(2bx+2a+\frac{-2da+2cb}{d}\right)\cos\left(\frac{-2da+2cb}{d}\right)}{d} - \frac{2\,\mathrm{Ci}\left(2bx+2a+\frac{-2da+2c}{d}\right)}{d}\right)}{d}}{d}\right)}{3d}\right)}{4}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*x+c)^4,x)
```

```
[Out] 1/b*(-1/6*b^4/((b*x+a)*d-d*a+c*b)^3/d-1/4*b^4*(-2/3*cos(2*b*x+2*a)/((b*x+a)
*d-d*a+c*b)^3/d-2/3*(-sin(2*b*x+2*a)/((b*x+a)*d-d*a+c*b)^2/d+(-2*cos(2*b*x+
2*a)/((b*x+a)*d-d*a+c*b)/d-2*(2*Si(2*b*x+2*a+2*(-a*d+b*c)/d)*cos(2*(-a*d+b*
c)/d)/d-2*Ci(2*b*x+2*a+2*(-a*d+b*c)/d)*sin(2*(-a*d+b*c)/d)/d)/d)/d)/d))
```

maxima [C] time = 0.86, size = 256, normalized size = 1.58

$$\frac{3\,b^4\left(E_4\left(\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)+E_4\left(-\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)\right)\cos\left(-\frac{2\,(bc-ad)}{d}\right)-b^4\left(3i\,E_4\left(\frac{2i\,bc+2i\,(bx+a)d-2i\,ad}{d}\right)-3i\,E_4\left(-\frac{2}{}\right.\right.}{12\left(b^3c^3d-3\,ab^2c^2d^2+3\,a^2bcd^3+(bx+a)^3d^4-a^3d^4+3\left(bcd^3-ad^4\right)(bx+a)^2+3\left(b^2c^2d^2-2\,a\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^4,x, algorithm="maxima")
```

```
[Out] 1/12*(3*b^4*(exp_integral_e(4, (2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d) + e
xp_integral_e(4, -(2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d))*cos(-2*(b*c - a
*d)/d) - b^4*(3*I*exp_integral_e(4, (2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d
) - 3*I*exp_integral_e(4, -(2*I*b*c + 2*I*(b*x + a)*d - 2*I*a*d)/d))*sin(-2
*(b*c - a*d)/d) - 2*b^4)/((b^3*c^3*d - 3*a*b^2*c^2*d^2 + 3*a^2*b*c*d^3 + (b
*x + a)^3*d^4 - a^3*d^4 + 3*(b*c*d^3 - a*d^4)*(b*x + a)^2 + 3*(b^2*c^2*d^2
- 2*a*b*c*d^3 + a^2*d^4)*(b*x + a))*b)
```

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

$$\int \frac{\sin(a+b\,x)^2}{(c+d\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(c + d*x)^4,x)
```

```
[Out] int(sin(a + b*x)^2/(c + d*x)^4, x)
```

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

$$\int \frac{\sin^2(a+bx)}{(c+dx)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*x+c)**4,x)
```

```
[Out] Integral(sin(a + b*x)**2/(c + d*x)**4, x)
```

3.16 $\int (c+dx)^4 \sin^3(a+bx)\,dx$

Optimal. Leaf size=225

$$\frac{8d^4\cos^3(a+bx)}{81b^5}-\frac{488d^4\cos(a+bx)}{27b^5}-\frac{8d^3(c+dx)\sin^3(a+bx)}{27b^4}-\frac{160d^3(c+dx)\sin(a+bx)}{9b^4}+\frac{80d^2(c+dx)^2\cos(a}{9b^3}$$

```
[Out] -488/27*d^4*cos(b*x+a)/b^5+80/9*d^2*(d*x+c)^2*cos(b*x+a)/b^3-2/3*(d*x+c)^4*
cos(b*x+a)/b+8/81*d^4*cos(b*x+a)^3/b^5-160/9*d^3*(d*x+c)*sin(b*x+a)/b^4+8/3
*d*(d*x+c)^3*sin(b*x+a)/b^2+4/9*d^2*(d*x+c)^2*cos(b*x+a)*sin(b*x+a)^2/b^3-1
/3*(d*x+c)^4*cos(b*x+a)*sin(b*x+a)^2/b-8/27*d^3*(d*x+c)*sin(b*x+a)^3/b^4+4/
9*d*(d*x+c)^3*sin(b*x+a)^3/b^2
```

Rubi [A] time = 0.25, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3311, 3296, 2638, 2633}

$$-\frac{8d^3(c+dx)\sin^3(a+bx)}{27b^4}-\frac{160d^3(c+dx)\sin(a+bx)}{9b^4}+\frac{80d^2(c+dx)^2\cos(a+bx)}{9b^3}+\frac{4d^2(c+dx)^2\sin^2(a+bx)\cos(}{9b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^4*Sin[a + b*x]^3,x]
```

```
[Out] (-488*d^4*Cos[a + b*x])/(27*b^5) + (80*d^2*(c + d*x)^2*Cos[a + b*x])/(9*b^3
) - (2*(c + d*x)^4*Cos[a + b*x])/(3*b) + (8*d^4*Cos[a + b*x]^3)/(81*b^5) -
(160*d^3*(c + d*x)*Sin[a + b*x])/(9*b^4) + (8*d*(c + d*x)^3*Sin[a + b*x])/(
3*b^2) + (4*d^2*(c + d*x)^2*Cos[a + b*x]*Sin[a + b*x]^2)/(9*b^3) - ((c + d*
x)^4*Cos[a + b*x]*Sin[a + b*x]^2)/(3*b) - (8*d^3*(c + d*x)*Sin[a + b*x]^3)/
(27*b^4) + (4*d*(c + d*x)^3*Sin[a + b*x]^3)/(9*b^2)
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rubi steps

$$\int (c+dx)^4 \sin^3(a+bx)\,dx = -\frac{(c+dx)^4\cos(a+bx)\sin^2(a+bx)}{3b} + \frac{4d(c+dx)^3\sin^3(a+bx)}{9b^2} + \frac{2}{3}\int (c+dx)^4 \mathrm{si}$$
$$= -\frac{2(c+dx)^4\cos(a+bx)}{3b} + \frac{4d^2(c+dx)^2\cos(a+bx)\sin^2(a+bx)}{9b^3} - \frac{(c+dx)^4\cos(}{}$$
$$= \frac{8d^2(c+dx)^2\cos(a+bx)}{9b^3} - \frac{2(c+dx)^4\cos(a+bx)}{3b} + \frac{8d(c+dx)^3\sin(a+bx)}{3b^2} + \frac{4d}{}$$
$$= -\frac{8d^4\cos(a+bx)}{27b^5} + \frac{80d^2(c+dx)^2\cos(a+bx)}{9b^3} - \frac{2(c+dx)^4\cos(a+bx)}{3b} + \frac{8d^4\mathrm{co}}{8}$$
$$= -\frac{56d^4\cos(a+bx)}{27b^5} + \frac{80d^2(c+dx)^2\cos(a+bx)}{9b^3} - \frac{2(c+dx)^4\cos(a+bx)}{3b} + \frac{8d^4\mathrm{c}}{}$$
$$= -\frac{488d^4\cos(a+bx)}{27b^5} + \frac{80d^2(c+dx)^2\cos(a+bx)}{9b^3} - \frac{2(c+dx)^4\cos(a+bx)}{3b} + \frac{8d^4}{}$$

Mathematica [A] time = 1.06, size = 150, normalized size = 0.67

$$\frac{-24bd(c+dx)\sin(a+bx)\left(\cos(2(a+bx))\left(3b^2(c+dx)^2-2d^2\right)-39b^2(c+dx)^2+242d^2\right)-243\cos(a+bx)\left(b^4(\right.}{324b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^4*Sin[a + b*x]^3,x]
```

```
[Out] (-243*(24*d^4 - 12*b^2*d^2*(c + d*x)^2 + b^4*(c + d*x)^4)*Cos[a + b*x] + (8
*d^4 - 36*b^2*d^2*(c + d*x)^2 + 27*b^4*(c + d*x)^4)*Cos[3*(a + b*x)] - 24*b
*d*(c + d*x)*(242*d^2 - 39*b^2*(c + d*x)^2 + (-2*d^2 + 3*b^2*(c + d*x)^2)*C
os[2*(a + b*x)])*Sin[a + b*x])/(324*b^5)
```

fricas [A] time = 0.85, size = 351, normalized size = 1.56

$$\frac{\left(27\,b^4d^4x^4+108\,b^4cd^3x^3+27\,b^4c^4-36\,b^2c^2d^2+8\,d^4+18\left(9\,b^4c^2d^2-2\,b^2d^4\right)x^2+36\left(3\,b^4c^3d-2\,b^2cd^3\right)x\right)\cos\left(b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^4*sin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/81*((27*b^4*d^4*x^4 + 108*b^4*c*d^3*x^3 + 27*b^4*c^4 - 36*b^2*c^2*d^2 + 8
*d^4 + 18*(9*b^4*c^2*d^2 - 2*b^2*d^4)*x^2 + 36*(3*b^4*c^3*d - 2*b^2*c*d^3)*
x)*cos(b*x + a)^3 - 3*(27*b^4*d^4*x^4 + 108*b^4*c*d^3*x^3 + 27*b^4*c^4 - 25
2*b^2*c^2*d^2 + 488*d^4 + 18*(9*b^4*c^2*d^2 - 14*b^2*d^4)*x^2 + 36*(3*b^4*c
^3*d - 14*b^2*c*d^3)*x)*cos(b*x + a) + 12*(21*b^3*d^4*x^3 + 63*b^3*c*d^3*x^
2 + 21*b^3*c^3*d - 122*b*c*d^3 - (3*b^3*d^4*x^3 + 9*b^3*c*d^3*x^2 + 3*b^3*c
^3*d - 2*b*c*d^3 + (9*b^3*c^2*d^2 - 2*b*d^4)*x)*cos(b*x + a)^2 + (63*b^3*c^
2*d^2 - 122*b*d^4)*x)*sin(b*x + a))/b^5
```

giac [A] time = 0.52, size = 351, normalized size = 1.56

$$\frac{\left(27\,b^4d^4x^4+108\,b^4cd^3x^3+162\,b^4c^2d^2x^2+108\,b^4c^3dx+27\,b^4c^4-36\,b^2d^4x^2-72\,b^2cd^3x-36\,b^2c^2d^2+8\,d^4\right)\cos}{324\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^4*sin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/324*(27*b^4*d^4*x^4 + 108*b^4*c*d^3*x^3 + 162*b^4*c^2*d^2*x^2 + 108*b^4*c
^3*d*x + 27*b^4*c^4 - 36*b^2*d^4*x^2 - 72*b^2*c*d^3*x - 36*b^2*c^2*d^2 + 8*
d^4)*cos(3*b*x + 3*a)/b^5 - 3/4*(b^4*d^4*x^4 + 4*b^4*c*d^3*x^3 + 6*b^4*c^2*
d^2*x^2 + 4*b^4*c^3*d*x + b^4*c^4 - 12*b^2*d^4*x^2 - 24*b^2*c*d^3*x - 12*b^
2*c^2*d^2 + 24*d^4)*cos(b*x + a)/b^5 - 1/27*(3*b^3*d^4*x^3 + 9*b^3*c*d^3*x^
2 + 9*b^3*c^2*d^2*x + 3*b^3*c^3*d - 2*b*d^4*x - 2*b*c*d^3)*sin(3*b*x + 3*a)
/b^5 + 3*(b^3*d^4*x^3 + 3*b^3*c*d^3*x^2 + 3*b^3*c^2*d^2*x + b^3*c^3*d - 6*b
*d^4*x - 6*b*c*d^3)*sin(b*x + a)/b^5
```

maple [B] time = 0.06, size = 1023, normalized size = 4.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^4*sin(b*x+a)^3,x)
```

```
[Out] 1/b*(1/b^4*d^4*(-1/3*(b*x+a)^4*(2+sin(b*x+a)^2)*cos(b*x+a)+8/3*(b*x+a)^3*si
n(b*x+a)+8*(b*x+a)^2*cos(b*x+a)-160/9*cos(b*x+a)-160/9*(b*x+a)*sin(b*x+a)+4
```

```
/9*(b*x+a)^3*sin(b*x+a)^3+4/9*(b*x+a)^2*(2+sin(b*x+a)^2)*cos(b*x+a)-8/27*(b
*x+a)*sin(b*x+a)^3-8/81*(2+sin(b*x+a)^2)*cos(b*x+a))-4/b^4*a*d^4*(-1/3*(b*x
+a)^3*(2+sin(b*x+a)^2)*cos(b*x+a)+2*(b*x+a)^2*sin(b*x+a)-40/9*sin(b*x+a)+4*
(b*x+a)*cos(b*x+a)+1/3*(b*x+a)^2*sin(b*x+a)^3+2/9*(b*x+a)*(2+sin(b*x+a)^2)*
cos(b*x+a)-2/27*sin(b*x+a)^3)+4/b^3*c*d^3*(-1/3*(b*x+a)^3*(2+sin(b*x+a)^2)*
cos(b*x+a)+2*(b*x+a)^2*sin(b*x+a)-40/9*sin(b*x+a)+4*(b*x+a)*cos(b*x+a)+1/3*
(b*x+a)^2*sin(b*x+a)^3+2/9*(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x+a)-2/27*sin(b*x
+a)^3)+6/b^4*a^2*d^4*(-1/3*(b*x+a)^2*(2+sin(b*x+a)^2)*cos(b*x+a)+4/3*cos(b*
x+a)+4/3*(b*x+a)*sin(b*x+a)+2/9*(b*x+a)*sin(b*x+a)^3+2/27*(2+sin(b*x+a)^2)*
cos(b*x+a))-12/b^3*a*c*d^3*(-1/3*(b*x+a)^2*(2+sin(b*x+a)^2)*cos(b*x+a)+4/3*
cos(b*x+a)+4/3*(b*x+a)*sin(b*x+a)+2/9*(b*x+a)*sin(b*x+a)^3+2/27*(2+sin(b*x+
a)^2)*cos(b*x+a))+6/b^2*c^2*d^2*(-1/3*(b*x+a)^2*(2+sin(b*x+a)^2)*cos(b*x+a)
+4/3*cos(b*x+a)+4/3*(b*x+a)*sin(b*x+a)+2/9*(b*x+a)*sin(b*x+a)^3+2/27*(2+sin
(b*x+a)^2)*cos(b*x+a))-4/b^4*a^3*d^4*(-1/3*(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x
+a)+1/9*sin(b*x+a)^3+2/3*sin(b*x+a))+12/b^3*a^2*c*d^3*(-1/3*(b*x+a)*(2+sin(
b*x+a)^2)*cos(b*x+a)+1/9*sin(b*x+a)^3+2/3*sin(b*x+a))-12/b^2*a*c^2*d^2*(-1/
3*(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x+a)+1/9*sin(b*x+a)^3+2/3*sin(b*x+a))+4/b*
c^3*d*(-1/3*(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x+a)+1/9*sin(b*x+a)^3+2/3*sin(b*
x+a))-1/3/b^4*a^4*d^4*(2+sin(b*x+a)^2)*cos(b*x+a)+4/3/b^3*a^3*c*d^3*(2+sin(
b*x+a)^2)*cos(b*x+a)-2/b^2*a^2*c^2*d^2*(2+sin(b*x+a)^2)*cos(b*x+a)+4/3/b*a*
c^3*d*(2+sin(b*x+a)^2)*cos(b*x+a)-1/3*c^4*(2+sin(b*x+a)^2)*cos(b*x+a))
```

maxima [B] time = 0.41, size = 934, normalized size = 4.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^4*sin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/324*(108*(cos(b*x + a)^3 - 3*cos(b*x + a))*c^4 - 432*(cos(b*x + a)^3 - 3*
cos(b*x + a))*a*c^3*d/b + 648*(cos(b*x + a)^3 - 3*cos(b*x + a))*a^2*c^2*d^2
/b^2 - 432*(cos(b*x + a)^3 - 3*cos(b*x + a))*a^3*c*d^3/b^3 + 108*(cos(b*x +
 a)^3 - 3*cos(b*x + a))*a^4*d^4/b^4 + 36*(3*(b*x + a)*cos(3*b*x + 3*a) - 27
*(b*x + a)*cos(b*x + a) - sin(3*b*x + 3*a) + 27*sin(b*x + a))*c^3*d/b - 108
*(3*(b*x + a)*cos(3*b*x + 3*a) - 27*(b*x + a)*cos(b*x + a) - sin(3*b*x + 3*
a) + 27*sin(b*x + a))*a*c^2*d^2/b^2 + 108*(3*(b*x + a)*cos(3*b*x + 3*a) - 2
7*(b*x + a)*cos(b*x + a) - sin(3*b*x + 3*a) + 27*sin(b*x + a))*a^2*c*d^3/b^
3 - 36*(3*(b*x + a)*cos(3*b*x + 3*a) - 27*(b*x + a)*cos(b*x + a) - sin(3*b*
x + 3*a) + 27*sin(b*x + a))*a^3*d^4/b^4 + 18*((9*(b*x + a)^2 - 2)*cos(3*b*x
 + 3*a) - 81*((b*x + a)^2 - 2)*cos(b*x + a) - 6*(b*x + a)*sin(3*b*x + 3*a)
+ 162*(b*x + a)*sin(b*x + a))*c^2*d^2/b^2 - 36*((9*(b*x + a)^2 - 2)*cos(3*b
*x + 3*a) - 81*((b*x + a)^2 - 2)*cos(b*x + a) - 6*(b*x + a)*sin(3*b*x + 3*a
) + 162*(b*x + a)*sin(b*x + a))*a*c*d^3/b^3 + 18*((9*(b*x + a)^2 - 2)*cos(3
*b*x + 3*a) - 81*((b*x + a)^2 - 2)*cos(b*x + a) - 6*(b*x + a)*sin(3*b*x + 3
*a) + 162*(b*x + a)*sin(b*x + a))*a^2*d^4/b^4 + 12*(3*(3*(b*x + a)^3 - 2*b*
```

```
x - 2*a)*cos(3*b*x + 3*a) - 81*((b*x + a)^3 - 6*b*x - 6*a)*cos(b*x + a) - (
9*(b*x + a)^2 - 2)*sin(3*b*x + 3*a) + 243*((b*x + a)^2 - 2)*sin(b*x + a))*c
*d^3/b^3 - 12*(3*(3*(b*x + a)^3 - 2*b*x - 2*a)*cos(3*b*x + 3*a) - 81*((b*x
+ a)^3 - 6*b*x - 6*a)*cos(b*x + a) - (9*(b*x + a)^2 - 2)*sin(3*b*x + 3*a) +
 243*((b*x + a)^2 - 2)*sin(b*x + a))*a*d^4/b^4 + ((27*(b*x + a)^4 - 36*(b*x
 + a)^2 + 8)*cos(3*b*x + 3*a) - 243*((b*x + a)^4 - 12*(b*x + a)^2 + 24)*cos
(b*x + a) - 12*(3*(b*x + a)^3 - 2*b*x - 2*a)*sin(3*b*x + 3*a) + 972*((b*x +
 a)^3 - 6*b*x - 6*a)*sin(b*x + a))*d^4/b^4)/b
```

mupad [B] time = 1.55, size = 533, normalized size = 2.37

$$\frac{8\,x\cos\left(a+b\,x\right)^3\,\left(20\,c\,d^3-3\,b^2\,c^3\,d\right)}{9\,b^3}-\frac{2\cos\left(a+b\,x\right)^3\,\left(27\,b^4\,c^4-360\,b^2\,c^2\,d^2+728\,d^4\right)}{81\,b^5}-\frac{\cos\left(a+b\,x\right)\,\sin\left(a+b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(c + d*x)^4,x)
```

```
[Out] (8*x*cos(a + b*x)^3*(20*c*d^3 - 3*b^2*c^3*d))/(9*b^3) - (2*cos(a + b*x)^3*(
728*d^4 + 27*b^4*c^4 - 360*b^2*c^2*d^2))/(81*b^5) - (cos(a + b*x)*sin(a + b
*x)^2*(488*d^4 + 27*b^4*c^4 - 252*b^2*c^2*d^2))/(27*b^5) - (8*cos(a + b*x)^
2*sin(a + b*x)*(20*c*d^3 - 3*b^2*c^3*d))/(9*b^4) - (2*d^4*x^4*cos(a + b*x)^
3)/(3*b) - (4*sin(a + b*x)^3*(122*c*d^3 - 21*b^2*c^3*d))/(27*b^4) + (28*d^4
*x^3*sin(a + b*x)^3)/(9*b^2) - (4*x*sin(a + b*x)^3*(122*d^4 - 63*b^2*c^2*d^
2))/(27*b^4) + (4*x^2*cos(a + b*x)^3*(20*d^4 - 9*b^2*c^2*d^2))/(9*b^3) + (2
*x^2*cos(a + b*x)*sin(a + b*x)^2*(14*d^4 - 9*b^2*c^2*d^2))/(3*b^3) - (8*c*d
^3*x^3*cos(a + b*x)^3)/(3*b) - (d^4*x^4*cos(a + b*x)*sin(a + b*x)^2)/b + (8
*d^4*x^3*cos(a + b*x)^2*sin(a + b*x))/(3*b^2) + (28*c*d^3*x^2*sin(a + b*x)^
3)/(3*b^2) - (8*x*cos(a + b*x)^2*sin(a + b*x)*(20*d^4 - 9*b^2*c^2*d^2))/(9*
b^4) + (4*x*cos(a + b*x)*sin(a + b*x)^2*(14*c*d^3 - 3*b^2*c^3*d))/(3*b^3) -
 (4*c*d^3*x^3*cos(a + b*x)*sin(a + b*x)^2)/b + (8*c*d^3*x^2*cos(a + b*x)^2*
sin(a + b*x))/b^2
```

sympy [A] time = 10.99, size = 772, normalized size = 3.43

$$\begin{cases} -\frac{c^4\sin^2(a+bx)\cos(a+bx)}{b}-\frac{2c^4\cos^3(a+bx)}{3b}-\frac{4c^3dx\sin^2(a+bx)\cos(a+bx)}{b}-\frac{8c^3dx\cos^3(a+bx)}{3b}-\frac{6c^2d^2x^2\sin^2(a+bx)\cos(a+bx)}{b}-\frac{4c^2d^2x^2}{} \\ \left(c^4x+2c^3dx^2+2c^2d^2x^3+cd^3x^4+\frac{d^4x^5}{5}\right)\sin^3(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**4*sin(b*x+a)**3,x)
```

```
[Out] Piecewise((-c**4*sin(a + b*x)**2*cos(a + b*x)/b - 2*c**4*cos(a + b*x)**3/(3
*b) - 4*c**3*d*x*sin(a + b*x)**2*cos(a + b*x)/b - 8*c**3*d*x*cos(a + b*x)**
```

```
3/(3*b) - 6*c**2*d**2*x**2*sin(a + b*x)**2*cos(a + b*x)/b - 4*c**2*d**2*x**
2*cos(a + b*x)**3/b - 4*c*d**3*x**3*sin(a + b*x)**2*cos(a + b*x)/b - 8*c*d*
*3*x**3*cos(a + b*x)**3/(3*b) - d**4*x**4*sin(a + b*x)**2*cos(a + b*x)/b -
2*d**4*x**4*cos(a + b*x)**3/(3*b) + 28*c**3*d*sin(a + b*x)**3/(9*b**2) + 8*
c**3*d*sin(a + b*x)*cos(a + b*x)**2/(3*b**2) + 28*c**2*d**2*x*sin(a + b*x)*
*3/(3*b**2) + 8*c**2*d**2*x*sin(a + b*x)*cos(a + b*x)**2/b**2 + 28*c*d**3*x
**2*sin(a + b*x)**3/(3*b**2) + 8*c*d**3*x**2*sin(a + b*x)*cos(a + b*x)**2/b
**2 + 28*d**4*x**3*sin(a + b*x)**3/(9*b**2) + 8*d**4*x**3*sin(a + b*x)*cos(
a + b*x)**2/(3*b**2) + 28*c**2*d**2*sin(a + b*x)**2*cos(a + b*x)/(3*b**3) +
 80*c**2*d**2*cos(a + b*x)**3/(9*b**3) + 56*c*d**3*x*sin(a + b*x)**2*cos(a
+ b*x)/(3*b**3) + 160*c*d**3*x*cos(a + b*x)**3/(9*b**3) + 28*d**4*x**2*sin(
a + b*x)**2*cos(a + b*x)/(3*b**3) + 80*d**4*x**2*cos(a + b*x)**3/(9*b**3) -
 488*c*d**3*sin(a + b*x)**3/(27*b**4) - 160*c*d**3*sin(a + b*x)*cos(a + b*x
)**2/(9*b**4) - 488*d**4*x*sin(a + b*x)**3/(27*b**4) - 160*d**4*x*sin(a + b
*x)*cos(a + b*x)**2/(9*b**4) - 488*d**4*sin(a + b*x)**2*cos(a + b*x)/(27*b*
*5) - 1456*d**4*cos(a + b*x)**3/(81*b**5), Ne(b, 0)), ((c**4*x + 2*c**3*d*x
**2 + 2*c**2*d**2*x**3 + c*d**3*x**4 + d**4*x**5/5)*sin(a)**3, True))
```

3.17 $\int (c + dx)^3 \sin^3(a + bx)\, dx$

Optimal. Leaf size=175

$$-\frac{2d^3 \sin^3(a+bx)}{27b^4}-\frac{40d^3 \sin(a+bx)}{9b^4}+\frac{40d^2(c+dx)\cos(a+bx)}{9b^3}+\frac{2d^2(c+dx)\sin^2(a+bx)\cos(a+bx)}{9b^3}+\frac{d(c+dx)}{}$$

```
[Out] 40/9*d^2*(d*x+c)*cos(b*x+a)/b^3-2/3*(d*x+c)^3*cos(b*x+a)/b-40/9*d^3*sin(b*x
+a)/b^4+2*d*(d*x+c)^2*sin(b*x+a)/b^2+2/9*d^2*(d*x+c)*cos(b*x+a)*sin(b*x+a)^
2/b^3-1/3*(d*x+c)^3*cos(b*x+a)*sin(b*x+a)^2/b-2/27*d^3*sin(b*x+a)^3/b^4+1/3
*d*(d*x+c)^2*sin(b*x+a)^3/b^2
```

Rubi [A] time = 0.16, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3311, 3296, 2637, 3310}

$$\frac{40d^2(c+dx)\cos(a+bx)}{9b^3}+\frac{2d^2(c+dx)\sin^2(a+bx)\cos(a+bx)}{9b^3}+\frac{d(c+dx)^2\sin^3(a+bx)}{3b^2}+\frac{2d(c+dx)^2\sin(a+bx}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*Sin[a + b*x]^3,x]
```

```
[Out] (40*d^2*(c + d*x)*Cos[a + b*x])/(9*b^3) - (2*(c + d*x)^3*Cos[a + b*x])/(3*b
) - (40*d^3*Sin[a + b*x])/(9*b^4) + (2*d*(c + d*x)^2*Sin[a + b*x])/b^2 + (2
*d^2*(c + d*x)*Cos[a + b*x]*Sin[a + b*x]^2)/(9*b^3) - ((c + d*x)^3*Cos[a +
b*x]*Sin[a + b*x]^2)/(3*b) - (2*d^3*Sin[a + b*x]^3)/(27*b^4) + (d*(c + d*x)
^2*Sin[a + b*x]^3)/(3*b^2)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

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

```
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rubi steps

$$\int (c+dx)^3\sin^3(a+bx)\,dx = -\frac{(c+dx)^3\cos(a+bx)\sin^2(a+bx)}{3b} + \frac{d(c+dx)^2\sin^3(a+bx)}{3b^2} + \frac{2}{3}\int (c+dx)^3 \sin$$

$$= -\frac{2(c+dx)^3\cos(a+bx)}{3b} + \frac{2d^2(c+dx)\cos(a+bx)\sin^2(a+bx)}{9b^3} - \frac{(c+dx)^3\cos(a$$

$$= \frac{4d^2(c+dx)\cos(a+bx)}{9b^3} - \frac{2(c+dx)^3\cos(a+bx)}{3b} + \frac{2d(c+dx)^2\sin(a+bx)}{b^2} + \frac{2d}{}$$

$$= \frac{40d^2(c+dx)\cos(a+bx)}{9b^3} - \frac{2(c+dx)^3\cos(a+bx)}{3b} - \frac{4d^3\sin(a+bx)}{9b^4} + \frac{2d(c+dx}{}$$

$$= \frac{40d^2(c+dx)\cos(a+bx)}{9b^3} - \frac{2(c+dx)^3\cos(a+bx)}{3b} - \frac{40d^3\sin(a+bx)}{9b^4} + \frac{2d(c+d}{}$$

Mathematica [A] time = 0.99, size = 127, normalized size = 0.73

$$\frac{-162b(c+dx)\cos(a+bx)\left(b^2(c+dx)^2-6d^2\right)+6b(c+dx)\cos(3(a+bx))\left(3b^2(c+dx)^2-2d^2\right)-4d\sin(a+bx)}{216b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3*Sin[a + b*x]^3,x]
```

```
[Out] (-162*b*(c + d*x)*(-6*d^2 + b^2*(c + d*x)^2)*Cos[a + b*x] + 6*b*(c + d*x)*(
-2*d^2 + 3*b^2*(c + d*x)^2)*Cos[3*(a + b*x)] - 4*d*(242*d^2 - 117*b^2*(c +
d*x)^2 + (-2*d^2 + 9*b^2*(c + d*x)^2)*Cos[2*(a + b*x)])*Sin[a + b*x])/(216*
b^4)
```

fricas [A] time = 0.63, size = 227, normalized size = 1.30

$$\frac{3\left(3\,b^3d^3x^3+9\,b^3cd^2x^2+3\,b^3c^3-2\,bcd^2+\left(9\,b^3c^2d-2\,bd^3\right)x\right)\cos\left(bx+a\right)^3-9\left(3\,b^3d^3x^3+9\,b^3cd^2x^2+3\,b^3c^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/27*(3*(3*b^3*d^3*x^3 + 9*b^3*c*d^2*x^2 + 3*b^3*c^3 - 2*b*c*d^2 + (9*b^3*c
^2*d - 2*b*d^3)*x)*cos(b*x + a)^3 - 9*(3*b^3*d^3*x^3 + 9*b^3*c*d^2*x^2 + 3*
b^3*c^3 - 14*b*c*d^2 + (9*b^3*c^2*d - 14*b*d^3)*x)*cos(b*x + a) + (63*b^2*d
^3*x^2 + 126*b^2*c*d^2*x + 63*b^2*c^2*d - 122*d^3 - (9*b^2*d^3*x^2 + 18*b^2
*c*d^2*x + 9*b^2*c^2*d - 2*d^3)*cos(b*x + a)^2)*sin(b*x + a))/b^4
```

giac [A] time = 0.33, size = 231, normalized size = 1.32

$$\frac{\left(3\,b^3d^3x^3+9\,b^3cd^2x^2+9\,b^3c^2dx+3\,b^3c^3-2\,bd^3x-2\,bcd^2\right)\cos\left(3\,bx+3\,a\right)}{36\,b^4}-\frac{3\left(b^3d^3x^3+3\,b^3cd^2x^2+3\,b^3c^2dx+\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/36*(3*b^3*d^3*x^3 + 9*b^3*c*d^2*x^2 + 9*b^3*c^2*d*x + 3*b^3*c^3 - 2*b*d^3
*x - 2*b*c*d^2)*cos(3*b*x + 3*a)/b^4 - 3/4*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 +
 3*b^3*c^2*d*x + b^3*c^3 - 6*b*d^3*x - 6*b*c*d^2)*cos(b*x + a)/b^4 - 1/108*
(9*b^2*d^3*x^2 + 18*b^2*c*d^2*x + 9*b^2*c^2*d - 2*d^3)*sin(3*b*x + 3*a)/b^4
 + 9/4*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d - 2*d^3)*sin(b*x + a)/b^4
```

maple [B] time = 0.02, size = 560, normalized size = 3.20

$$\frac{d^3\left(-\frac{(bx+a)^3\left(2+\sin^2(bx+a)\right)\cos(bx+a)}{3}+2(bx+a)^2\sin(bx+a)-\frac{40\sin(bx+a)}{9}+4(bx+a)\cos(bx+a)+\frac{(bx+a)^2\left(\sin^3(bx+a)\right)}{3}+\frac{2(bx+a)\left(2+\sin^2(bx+a)\right)\cos(bx+a)}{9}-\frac{2\left(\sin^3(bx+\right.}{27}\right.}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*sin(b*x+a)^3,x)
```

```
[Out] 1/b*(1/b^3*d^3*(-1/3*(b*x+a)^3*(2+sin(b*x+a)^2)*cos(b*x+a)+2*(b*x+a)^2*sin(
b*x+a)-40/9*sin(b*x+a)+4*(b*x+a)*cos(b*x+a)+1/3*(b*x+a)^2*sin(b*x+a)^3+2/9*
(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x+a)-2/27*sin(b*x+a)^3)-3/b^3*a*d^3*(-1/3*(b
*x+a)^2*(2+sin(b*x+a)^2)*cos(b*x+a)+4/3*cos(b*x+a)+4/3*(b*x+a)*sin(b*x+a)+2
/9*(b*x+a)*sin(b*x+a)^3+2/27*(2+sin(b*x+a)^2)*cos(b*x+a))+3/b^2*c*d^2*(-1/3
*(b*x+a)^2*(2+sin(b*x+a)^2)*cos(b*x+a)+4/3*cos(b*x+a)+4/3*(b*x+a)*sin(b*x+a
)+2/9*(b*x+a)*sin(b*x+a)^3+2/27*(2+sin(b*x+a)^2)*cos(b*x+a))+3/b^3*a^2*d^3*
(-1/3*(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x+a)+1/9*sin(b*x+a)^3+2/3*sin(b*x+a))-
6/b^2*a*c*d^2*(-1/3*(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x+a)+1/9*sin(b*x+a)^3+2/
3*sin(b*x+a))+3/b*c^2*d*(-1/3*(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x+a)+1/9*sin(b
*x+a)^3+2/3*sin(b*x+a))+1/3/b^3*a^3*d^3*(2+sin(b*x+a)^2)*cos(b*x+a)-1/b^2*a
```

```
^2*c*d^2*(2+sin(b*x+a)^2)*cos(b*x+a)+1/b*a*c^2*d*(2+sin(b*x+a)^2)*cos(b*x+a
)-1/3*c^3*(2+sin(b*x+a)^2)*cos(b*x+a))
```

maxima [B] time = 0.38, size = 541, normalized size = 3.09

$$\frac{36\left(\cos\left(bx+a\right)^{3}-3\cos\left(bx+a\right)\right)c^{3}-\frac{108\left(\cos(bx+a)^{3}-3\cos(bx+a)\right)ac^{2}d}{b}+\frac{108\left(\cos(bx+a)^{3}-3\cos(bx+a)\right)a^{2}cd^{2}}{b^{2}}-\frac{36\left(\cos(bx+a)^{3}\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/108*(36*(cos(b*x + a)^3 - 3*cos(b*x + a))*c^3 - 108*(cos(b*x + a)^3 - 3*c
os(b*x + a))*a*c^2*d/b + 108*(cos(b*x + a)^3 - 3*cos(b*x + a))*a^2*c*d^2/b^
2 - 36*(cos(b*x + a)^3 - 3*cos(b*x + a))*a^3*d^3/b^3 + 9*(3*(b*x + a)*cos(3
*b*x + 3*a) - 27*(b*x + a)*cos(b*x + a) - sin(3*b*x + 3*a) + 27*sin(b*x + a
))*c^2*d/b - 18*(3*(b*x + a)*cos(3*b*x + 3*a) - 27*(b*x + a)*cos(b*x + a) -
 sin(3*b*x + 3*a) + 27*sin(b*x + a))*a*c*d^2/b^2 + 9*(3*(b*x + a)*cos(3*b*x
 + 3*a) - 27*(b*x + a)*cos(b*x + a) - sin(3*b*x + 3*a) + 27*sin(b*x + a))*a
^2*d^3/b^3 + 3*((9*(b*x + a)^2 - 2)*cos(3*b*x + 3*a) - 81*((b*x + a)^2 - 2)
*cos(b*x + a) - 6*(b*x + a)*sin(3*b*x + 3*a) + 162*(b*x + a)*sin(b*x + a))*
c*d^2/b^2 - 3*((9*(b*x + a)^2 - 2)*cos(3*b*x + 3*a) - 81*((b*x + a)^2 - 2)*
cos(b*x + a) - 6*(b*x + a)*sin(3*b*x + 3*a) + 162*(b*x + a)*sin(b*x + a))*a
*d^3/b^3 + (3*(3*(b*x + a)^3 - 2*b*x - 2*a)*cos(3*b*x + 3*a) - 81*((b*x + a
)^3 - 6*b*x - 6*a)*cos(b*x + a) - (9*(b*x + a)^2 - 2)*sin(3*b*x + 3*a) + 24
3*((b*x + a)^2 - 2)*sin(b*x + a))*d^3/b^3)/b
```

mupad [B] time = 1.11, size = 365, normalized size = 2.09

$$\frac{2\cos\left(a+b\,x\right)^{3}\,\left(20\,c\,d^{2}-3\,b^{2}\,c^{3}\right)}{9\,b^{3}}-\frac{\sin\left(a+b\,x\right)^{3}\,\left(122\,d^{3}-63\,b^{2}\,c^{2}\,d\right)}{27\,b^{4}}+\frac{\cos\left(a+b\,x\right)\,\sin\left(a+b\,x\right)^{2}\,\left(14\,c\,d^{2}-3\,b\right.}{3\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(c + d*x)^3,x)
```

```
[Out] (2*cos(a + b*x)^3*(20*c*d^2 - 3*b^2*c^3))/(9*b^3) - (sin(a + b*x)^3*(122*d^
3 - 63*b^2*c^2*d))/(27*b^4) + (cos(a + b*x)*sin(a + b*x)^2*(14*c*d^2 - 3*b^
2*c^3))/(3*b^3) - (2*cos(a + b*x)^2*sin(a + b*x)*(20*d^3 - 9*b^2*c^2*d))/(9
*b^4) + (2*x*cos(a + b*x)^3*(20*d^3 - 9*b^2*c^2*d))/(9*b^3) - (2*d^3*x^3*co
s(a + b*x)^3)/(3*b) + (7*d^3*x^2*sin(a + b*x)^3)/(3*b^2) + (14*c*d^2*x*sin(
a + b*x)^3)/(3*b^2) + (x*cos(a + b*x)*sin(a + b*x)^2*(14*d^3 - 9*b^2*c^2*d)
)/(3*b^3) - (2*c*d^2*x^2*cos(a + b*x)^3)/b - (d^3*x^3*cos(a + b*x)*sin(a +
b*x)^2)/b + (2*d^3*x^2*cos(a + b*x)^2*sin(a + b*x))/b^2 - (3*c*d^2*x^2*cos(
a + b*x)*sin(a + b*x)^2)/b + (4*c*d^2*x*cos(a + b*x)^2*sin(a + b*x))/b^2
```

sympy [A] time = 5.74, size = 495, normalized size = 2.83

$$\begin{cases} -\frac{c^3\sin^2(a+bx)\cos(a+bx)}{b} - \frac{2c^3\cos^3(a+bx)}{3b} - \frac{3c^2dx\sin^2(a+bx)\cos(a+bx)}{b} - \frac{2c^2dx\cos^3(a+bx)}{b} - \frac{3cd^2x^2\sin^2(a+bx)\cos(a+bx)}{b} - \frac{2cd^2x^2\cos \end{cases}$$
$$\left(c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4}\right)\sin^3(a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*sin(b*x+a)**3,x)
```

```
[Out] Piecewise((-c**3*sin(a + b*x)**2*cos(a + b*x)/b - 2*c**3*cos(a + b*x)**3/(3
*b) - 3*c**2*d*x*sin(a + b*x)**2*cos(a + b*x)/b - 2*c**2*d*x*cos(a + b*x)**
3/b - 3*c*d**2*x**2*sin(a + b*x)**2*cos(a + b*x)/b - 2*c*d**2*x**2*cos(a +
b*x)**3/b - d**3*x**3*sin(a + b*x)**2*cos(a + b*x)/b - 2*d**3*x**3*cos(a +
b*x)**3/(3*b) + 7*c**2*d*sin(a + b*x)**3/(3*b**2) + 2*c**2*d*sin(a + b*x)*c
os(a + b*x)**2/b**2 + 14*c*d**2*x*sin(a + b*x)**3/(3*b**2) + 4*c*d**2*x*sin
(a + b*x)*cos(a + b*x)**2/b**2 + 7*d**3*x**2*sin(a + b*x)**3/(3*b**2) + 2*d
**3*x**2*sin(a + b*x)*cos(a + b*x)**2/b**2 + 14*c*d**2*sin(a + b*x)**2*cos(
a + b*x)/(3*b**3) + 40*c*d**2*cos(a + b*x)**3/(9*b**3) + 14*d**3*x*sin(a +
b*x)**2*cos(a + b*x)/(3*b**3) + 40*d**3*x*cos(a + b*x)**3/(9*b**3) - 122*d*
*3*sin(a + b*x)**3/(27*b**4) - 40*d**3*sin(a + b*x)*cos(a + b*x)**2/(9*b**4
), Ne(b, 0)), ((c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3 + d**3*x**4/4)*sin(a
)**3, True))
```

3.18 $\int (c+dx)^2 \sin^3(a+bx)\,dx$

Optimal. Leaf size=123

$$-\frac{2d^2\cos^3(a+bx)}{27b^3}+\frac{14d^2\cos(a+bx)}{9b^3}+\frac{2d(c+dx)\sin^3(a+bx)}{9b^2}+\frac{4d(c+dx)\sin(a+bx)}{3b^2}-\frac{2(c+dx)^2\cos(a+bx)}{3b}$$

```
[Out] 14/9*d^2*cos(b*x+a)/b^3-2/3*(d*x+c)^2*cos(b*x+a)/b-2/27*d^2*cos(b*x+a)^3/b^
3+4/3*d*(d*x+c)*sin(b*x+a)/b^2-1/3*(d*x+c)^2*cos(b*x+a)*sin(b*x+a)^2/b+2/9*
d*(d*x+c)*sin(b*x+a)^3/b^2
```

Rubi [A] time = 0.10, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3311, 3296, 2638, 2633}

$$\frac{2d(c+dx)\sin^3(a+bx)}{9b^2}+\frac{4d(c+dx)\sin(a+bx)}{3b^2}-\frac{2d^2\cos^3(a+bx)}{27b^3}+\frac{14d^2\cos(a+bx)}{9b^3}-\frac{2(c+dx)^2\cos(a+bx)}{3b}-$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*Sin[a + b*x]^3,x]
```

```
[Out] (14*d^2*Cos[a + b*x])/(9*b^3) - (2*(c + d*x)^2*Cos[a + b*x])/(3*b) - (2*d^2
*Cos[a + b*x]^3)/(27*b^3) + (4*d*(c + d*x)*Sin[a + b*x])/(3*b^2) - ((c + d*
x)^2*Cos[a + b*x]*Sin[a + b*x]^2)/(3*b) + (2*d*(c + d*x)*Sin[a + b*x]^3)/(9
*b^2)
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rubi steps

$$\int (c+dx)^2 \sin^3(a+bx)\,dx = -\frac{(c+dx)^2\cos(a+bx)\sin^2(a+bx)}{3b} + \frac{2d(c+dx)\sin^3(a+bx)}{9b^2} + \frac{2}{3}\int (c+dx)^2 \sin($$

$$= -\frac{2(c+dx)^2\cos(a+bx)}{3b} - \frac{(c+dx)^2\cos(a+bx)\sin^2(a+bx)}{3b} + \frac{2d(c+dx)\sin^3(a+$$

$$= \frac{2d^2\cos(a+bx)}{9b^3} - \frac{2(c+dx)^2\cos(a+bx)}{3b} - \frac{2d^2\cos^3(a+bx)}{27b^3} + \frac{4d(c+dx)\sin(a+}{3b^2}$$

$$= \frac{14d^2\cos(a+bx)}{9b^3} - \frac{2(c+dx)^2\cos(a+bx)}{3b} - \frac{2d^2\cos^3(a+bx)}{27b^3} + \frac{4d(c+dx)\sin(a+}{3b^2}$$

Mathematica [A] time = 0.46, size = 86, normalized size = 0.70

$$\frac{-81\cos(a+bx)\left(b^2(c+dx)^2-2d^2\right)+\cos(3(a+bx))\left(9b^2(c+dx)^2-2d^2\right)-6bd(c+dx)(\sin(3(a+bx))-27\sin(}{108b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*Sin[a + b*x]^3,x]
```

```
[Out] (-81*(-2*d^2 + b^2*(c + d*x)^2)*Cos[a + b*x] + (-2*d^2 + 9*b^2*(c + d*x)^2)
*Cos[3*(a + b*x)] - 6*b*d*(c + d*x)*(-27*Sin[a + b*x] + Sin[3*(a + b*x)]))/
(108*b^3)
```

fricas [A] time = 0.61, size = 131, normalized size = 1.07

$$\frac{\left(9\,b^2d^2x^2+18\,b^2cdx+9\,b^2c^2-2\,d^2\right)\cos\left(bx+a\right)^3-3\left(9\,b^2d^2x^2+18\,b^2cdx+9\,b^2c^2-14\,d^2\right)\cos\left(bx+a\right)+6\left(7\,b}{27\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*sin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/27*((9*b^2*d^2*x^2 + 18*b^2*c*d*x + 9*b^2*c^2 - 2*d^2)*cos(b*x + a)^3 - 3
*(9*b^2*d^2*x^2 + 18*b^2*c*d*x + 9*b^2*c^2 - 14*d^2)*cos(b*x + a) + 6*(7*b*
d^2*x + 7*b*c*d - (b*d^2*x + b*c*d)*cos(b*x + a)^2)*sin(b*x + a))/b^3
```

giac [A] time = 2.03, size = 137, normalized size = 1.11

$$\frac{\left(9\,b^2d^2x^2+18\,b^2cdx+9\,b^2c^2-2\,d^2\right)\cos\left(3\,bx+3\,a\right)}{108\,b^3}-\frac{3\left(b^2d^2x^2+2\,b^2cdx+b^2c^2-2\,d^2\right)\cos\left(bx+a\right)}{4\,b^3}-\frac{\left(bd^2x+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*sin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/108*(9*b^2*d^2*x^2 + 18*b^2*c*d*x + 9*b^2*c^2 - 2*d^2)*cos(3*b*x + 3*a)/b
^3 - 3/4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*d^2)*cos(b*x + a)/b^3 - 1
/18*(b*d^2*x + b*c*d)*sin(3*b*x + 3*a)/b^3 + 3/2*(b*d^2*x + b*c*d)*sin(b*x
+ a)/b^3
```

maple [B] time = 0.02, size = 265, normalized size = 2.15

$$\frac{\frac{d^2\left(-\frac{(bx+a)^2\left(2+\sin^2(bx+a)\right)\cos(bx+a)}{3}+\frac{4\cos(bx+a)}{3}+\frac{4(bx+a)\sin(bx+a)}{3}+\frac{2(bx+a)\left(\sin^3(bx+a)\right)}{9}+\frac{2\left(2+\sin^2(bx+a)\right)\cos(bx+a)}{27}\right)}{b^2}-\frac{2a\,d^2\left(-\frac{(bx+a)\left(2+\sin^2(bx+a)\right)\cos(bx+a}{3}\right.}{b^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*sin(b*x+a)^3,x)
```

```
[Out] 1/b*(1/b^2*d^2*(-1/3*(b*x+a)^2*(2+sin(b*x+a)^2)*cos(b*x+a)+4/3*cos(b*x+a)+4
/3*(b*x+a)*sin(b*x+a)+2/9*(b*x+a)*sin(b*x+a)^3+2/27*(2+sin(b*x+a)^2)*cos(b*
x+a))-2/b^2*a*d^2*(-1/3*(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x+a)+1/9*sin(b*x+a)^
3+2/3*sin(b*x+a))+2/b*c*d*(-1/3*(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x+a)+1/9*sin
(b*x+a)^3+2/3*sin(b*x+a))-1/3/b^2*a^2*d^2*(2+sin(b*x+a)^2)*cos(b*x+a)+2/3/b
*a*c*d*(2+sin(b*x+a)^2)*cos(b*x+a)-1/3*c^2*(2+sin(b*x+a)^2)*cos(b*x+a))
```

maxima [B] time = 0.46, size = 270, normalized size = 2.20

$$\frac{36\left(\cos\left(bx+a\right)^3-3\,\cos\left(bx+a\right)\right)c^2-\frac{72\left(\cos(bx+a)^3-3\,\cos(bx+a)\right)acd}{b}+\frac{36\left(\cos(bx+a)^3-3\,\cos(bx+a)\right)a^2d^2}{b^2}+\frac{6\,(3\,(bx+a)\cos(3\,bx}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*sin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/108*(36*(cos(b*x + a)^3 - 3*cos(b*x + a))*c^2 - 72*(cos(b*x + a)^3 - 3*co
s(b*x + a))*a*c*d/b + 36*(cos(b*x + a)^3 - 3*cos(b*x + a))*a^2*d^2/b^2 + 6*
(3*(b*x + a)*cos(3*b*x + 3*a) - 27*(b*x + a)*cos(b*x + a) - sin(3*b*x + 3*a
) + 27*sin(b*x + a))*c*d/b - 6*(3*(b*x + a)*cos(3*b*x + 3*a) - 27*(b*x + a)
*cos(b*x + a) - sin(3*b*x + 3*a) + 27*sin(b*x + a))*a*d^2/b^2 + ((9*(b*x +
```

```
a)^2 - 2)*cos(3*b*x + 3*a) - 81*((b*x + a)^2 - 2)*cos(b*x + a) - 6*(b*x + a
)*sin(3*b*x + 3*a) + 162*(b*x + a)*sin(b*x + a))*d^2/b^2)/b
```

mupad [B] time = 0.98, size = 174, normalized size = 1.41

$$\frac{\frac{3\,d^2\,x\,\sin(a+b\,x)}{2}-\frac{d^2\,x\,\sin(3\,a+3\,b\,x)}{18}+\frac{3\,c\,d\,\sin(a+b\,x)}{2}-\frac{c\,d\,\sin(3\,a+3\,b\,x)}{18}}{b^2}-\frac{\frac{3\,c^2\,\cos(a+b\,x)}{4}-\frac{c^2\,\cos(3\,a+3\,b\,x)}{12}+\frac{3\,d^2\,x^2\,\cos(a+b\,x)}{4}-\frac{d^2\,x^2}{}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(c + d*x)^2,x)
```

```
[Out] ((3*d^2*x*sin(a + b*x))/2 - (d^2*x*sin(3*a + 3*b*x))/18 + (3*c*d*sin(a + b*
x))/2 - (c*d*sin(3*a + 3*b*x))/18)/b^2 - ((3*c^2*cos(a + b*x))/4 - (c^2*cos
(3*a + 3*b*x))/12 + (3*d^2*x^2*cos(a + b*x))/4 - (d^2*x^2*cos(3*a + 3*b*x))
/12 - (c*d*x*cos(3*a + 3*b*x))/6 + (3*c*d*x*cos(a + b*x))/2)/b + (3*d^2*cos
(a + b*x))/(2*b^3) - (d^2*cos(3*a + 3*b*x))/(54*b^3)
```

sympy [A] time = 3.04, size = 284, normalized size = 2.31

$$\begin{cases} -\frac{c^2\sin^2(a+bx)\cos(a+bx)}{b}-\frac{2c^2\cos^3(a+bx)}{3b}-\frac{2cdx\sin^2(a+bx)\cos(a+bx)}{b}-\frac{4cdx\cos^3(a+bx)}{3b}-\frac{d^2x^2\sin^2(a+bx)\cos(a+bx)}{b}-\frac{2d^2x^2\cos^3(a}{3b} \\ \left(c^2x+cdx^2+\frac{d^2x^3}{3}\right)\sin^3(a) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*sin(b*x+a)**3,x)
```

```
[Out] Piecewise((-c**2*sin(a + b*x)**2*cos(a + b*x)/b - 2*c**2*cos(a + b*x)**3/(3
*b) - 2*c*d*x*sin(a + b*x)**2*cos(a + b*x)/b - 4*c*d*x*cos(a + b*x)**3/(3*b
) - d**2*x**2*sin(a + b*x)**2*cos(a + b*x)/b - 2*d**2*x**2*cos(a + b*x)**3/
(3*b) + 14*c*d*sin(a + b*x)**3/(9*b**2) + 4*c*d*sin(a + b*x)*cos(a + b*x)**
2/(3*b**2) + 14*d**2*x*sin(a + b*x)**3/(9*b**2) + 4*d**2*x*sin(a + b*x)*cos
(a + b*x)**2/(3*b**2) + 14*d**2*sin(a + b*x)**2*cos(a + b*x)/(9*b**3) + 40*
d**2*cos(a + b*x)**3/(27*b**3), Ne(b, 0)), ((c**2*x + c*d*x**2 + d**2*x**3/
3)*sin(a)**3, True))
```

3.19 $\int (c+dx)\sin^3(a+bx)\,dx$

Optimal. Leaf size=75

$$\frac{d\sin^3(a+bx)}{9b^2}+\frac{2d\sin(a+bx)}{3b^2}-\frac{2(c+dx)\cos(a+bx)}{3b}-\frac{(c+dx)\sin^2(a+bx)\cos(a+bx)}{3b}$$

```
[Out] -2/3*(d*x+c)*cos(b*x+a)/b+2/3*d*sin(b*x+a)/b^2-1/3*(d*x+c)*cos(b*x+a)*sin(b
*x+a)^2/b+1/9*d*sin(b*x+a)^3/b^2
```

Rubi [A] time = 0.04, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3310, 3296, 2637}

$$\frac{d\sin^3(a+bx)}{9b^2}+\frac{2d\sin(a+bx)}{3b^2}-\frac{2(c+dx)\cos(a+bx)}{3b}-\frac{(c+dx)\sin^2(a+bx)\cos(a+bx)}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*Sin[a + b*x]^3,x]
```

```
[Out] (-2*(c + d*x)*Cos[a + b*x])/(3*b) + (2*d*Sin[a + b*x])/(3*b^2) - ((c + d*x)
*Cos[a + b*x]*Sin[a + b*x]^2)/(3*b) + (d*Sin[a + b*x]^3)/(9*b^2)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

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

Rubi steps

$$\int (c+dx)\sin^3(a+bx)\,dx = -\frac{(c+dx)\cos(a+bx)\sin^2(a+bx)}{3b} + \frac{d\sin^3(a+bx)}{9b^2} + \frac{2}{3}\int (c+dx)\sin(a+bx)\,dx$$
$$= -\frac{2(c+dx)\cos(a+bx)}{3b} - \frac{(c+dx)\cos(a+bx)\sin^2(a+bx)}{3b} + \frac{d\sin^3(a+bx)}{9b^2} + \frac{(2d)}{}$$
$$= -\frac{2(c+dx)\cos(a+bx)}{3b} + \frac{2d\sin(a+bx)}{3b^2} - \frac{(c+dx)\cos(a+bx)\sin^2(a+bx)}{3b} + \frac{d\sin}{}$$

Mathematica [A] time = 0.19, size = 59, normalized size = 0.79

$$\frac{-27b(c+dx)\cos(a+bx)+3b(c+dx)\cos(3(a+bx))+d(27\sin(a+bx)-\sin(3(a+bx)))}{36b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*Sin[a + b*x]^3,x]
```

```
[Out] (-27*b*(c + d*x)*Cos[a + b*x] + 3*b*(c + d*x)*Cos[3*(a + b*x)] + d*(27*Sin[
a + b*x] - Sin[3*(a + b*x)]))/(36*b^2)
```

fricas [A] time = 0.59, size = 62, normalized size = 0.83

$$\frac{3\,(bdx+bc)\cos{(bx+a)}^3-9\,(bdx+bc)\cos{(bx+a)}-\left(d\cos{(bx+a)}^2-7\,d\right)\sin{(bx+a)}}{9\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/9*(3*(b*d*x + b*c)*cos(b*x + a)^3 - 9*(b*d*x + b*c)*cos(b*x + a) - (d*cos
(b*x + a)^2 - 7*d)*sin(b*x + a))/b^2
```

giac [A] time = 1.21, size = 69, normalized size = 0.92

$$\frac{(bdx+bc)\cos{(3\,bx+3\,a)}}{12\,b^2}-\frac{3\,(bdx+bc)\cos{(bx+a)}}{4\,b^2}-\frac{d\sin{(3\,bx+3\,a)}}{36\,b^2}+\frac{3\,d\sin{(bx+a)}}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/12*(b*d*x + b*c)*cos(3*b*x + 3*a)/b^2 - 3/4*(b*d*x + b*c)*cos(b*x + a)/b^
2 - 1/36*d*sin(3*b*x + 3*a)/b^2 + 3/4*d*sin(b*x + a)/b^2
```

maple [A] time = 0.02, size = 95, normalized size = 1.27

$$\frac{\frac{d\left(-\frac{(bx+a)\left(2+\sin^2(bx+a)\right)\cos(bx+a)}{3}+\frac{\left(\sin^3(bx+a)\right)}{9}+\frac{2\sin(bx+a)}{3}\right)}{b}+\frac{da\left(2+\sin^2(bx+a)\right)\cos(bx+a)}{3b}-\frac{c\left(2+\sin^2(bx+a)\right)\cos(bx+a)}{3}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*sin(b*x+a)^3,x)
```

```
[Out] 1/b*(1/b*d*(-1/3*(b*x+a)*(2+sin(b*x+a)^2)*cos(b*x+a)+1/9*sin(b*x+a)^3+2/3*s
in(b*x+a))+1/3/b*d*a*(2+sin(b*x+a)^2)*cos(b*x+a)-1/3*c*(2+sin(b*x+a)^2)*cos
(b*x+a))
```

maxima [A] time = 0.31, size = 104, normalized size = 1.39

$$\frac{12\left(\cos(bx+a)^3-3\cos(bx+a)\right)c-\frac{12\left(\cos(bx+a)^3-3\cos(bx+a)\right)ad}{b}+\frac{(3(bx+a)\cos(3bx+3a)-27(bx+a)\cos(bx+a)-\sin(3bx+3a)+}{b}}{36b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/36*(12*(cos(b*x + a)^3 - 3*cos(b*x + a))*c - 12*(cos(b*x + a)^3 - 3*cos(b
*x + a))*a*d/b + (3*(b*x + a)*cos(3*b*x + 3*a) - 27*(b*x + a)*cos(b*x + a)
- sin(3*b*x + 3*a) + 27*sin(b*x + a))*d/b)/b
```

mupad [B] time = 0.63, size = 79, normalized size = 1.05

$$\frac{7\,d\,\sin\left(a+b\,x\right)}{9\,b^2}-\frac{c\,\cos\left(a+b\,x\right)-\frac{c\,\cos(a+b\,x)^3}{3}+d\,x\,\cos\left(a+b\,x\right)-\frac{d\,x\,\cos(a+b\,x)^3}{3}}{b}-\frac{d\cos\left(a+b\,x\right)^2\,\sin\left(a+b\,x\right)}{9\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(c + d*x),x)
```

```
[Out] (7*d*sin(a + b*x))/(9*b^2) - (c*cos(a + b*x) - (c*cos(a + b*x)^3)/3 + d*x*c
os(a + b*x) - (d*x*cos(a + b*x)^3)/3)/b - (d*cos(a + b*x)^2*sin(a + b*x))/(
9*b^2)
```

sympy [A] time = 1.25, size = 126, normalized size = 1.68

$$\begin{cases} -\frac{c\sin^2(a+bx)\cos(a+bx)}{b}-\frac{2c\cos^3(a+bx)}{3b}-\frac{dx\sin^2(a+bx)\cos(a+bx)}{b}-\frac{2dx\cos^3(a+bx)}{3b}+\frac{7d\sin^3(a+bx)}{9b^2}+\frac{2d\sin(a+bx)\cos^2(a+bx)}{3b^2} & \text{f} \\ \left(cx+\frac{dx^2}{2}\right)\sin^3(a) & \text{o} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*sin(b*x+a)**3,x)
```

```
[Out] Piecewise((-c*sin(a + b*x)**2*cos(a + b*x)/b - 2*c*cos(a + b*x)**3/(3*b) -
d*x*sin(a + b*x)**2*cos(a + b*x)/b - 2*d*x*cos(a + b*x)**3/(3*b) + 7*d*sin(
a + b*x)**3/(9*b**2) + 2*d*sin(a + b*x)*cos(a + b*x)**2/(3*b**2), Ne(b, 0))
, ((c*x + d*x**2/2)*sin(a)**3, True))
```

3.20 $\int \frac{\sin^3(a+bx)}{c+dx}\,dx$

Optimal. Leaf size=121

$$-\frac{\sin\left(3a-\frac{3bc}{d}\right)\text{Ci}\left(\frac{3bc}{d}+3bx\right)}{4d}+\frac{3\sin\left(a-\frac{bc}{d}\right)\text{Ci}\left(\frac{bc}{d}+bx\right)}{4d}+\frac{3\cos\left(a-\frac{bc}{d}\right)\text{Si}\left(\frac{bc}{d}+bx\right)}{4d}-\frac{\cos\left(3a-\frac{3bc}{d}\right)\text{Si}\left(\frac{3bc}{d}+\right.}{4d}$$

```
[Out] 3/4*cos(a-b*c/d)*Si(b*c/d+b*x)/d-1/4*cos(3*a-3*b*c/d)*Si(3*b*c/d+3*b*x)/d-1
/4*Ci(3*b*c/d+3*b*x)*sin(3*a-3*b*c/d)/d+3/4*Ci(b*c/d+b*x)*sin(a-b*c/d)/d
```

Rubi [A] time = 0.25, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3312, 3303, 3299, 3302}

$$-\frac{\sin\left(3a-\frac{3bc}{d}\right)\text{CosIntegral}\left(\frac{3bc}{d}+3bx\right)}{4d}+\frac{3\sin\left(a-\frac{bc}{d}\right)\text{CosIntegral}\left(\frac{bc}{d}+bx\right)}{4d}+\frac{3\cos\left(a-\frac{bc}{d}\right)\text{Si}\left(\frac{bc}{d}+bx\right)}{4d}-\ldots$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3/(c + d*x),x]
```

```
[Out] -(CosIntegral[(3*b*c)/d + 3*b*x]*Sin[3*a - (3*b*c)/d])/(4*d) + (3*CosIntegr
al[(b*c)/d + b*x]*Sin[a - (b*c)/d])/(4*d) + (3*Cos[a - (b*c)/d]*SinIntegral
[(b*c)/d + b*x])/(4*d) - (Cos[3*a - (3*b*c)/d]*SinIntegral[(3*b*c)/d + 3*b*
x])/(4*d)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int \frac{\sin^3(a+bx)}{c+dx}\,dx = \int \left(\frac{3\sin(a+bx)}{4(c+dx)} - \frac{\sin(3a+3bx)}{4(c+dx)}\right)dx$$
$$= -\left(\frac{1}{4}\int \frac{\sin(3a+3bx)}{c+dx}\,dx\right) + \frac{3}{4}\int \frac{\sin(a+bx)}{c+dx}\,dx$$
$$= -\left(\frac{1}{4}\cos\left(3a-\frac{3bc}{d}\right)\int \frac{\sin\left(\frac{3bc}{d}+3bx\right)}{c+dx}\,dx\right) + \frac{1}{4}\left(3\cos\left(a-\frac{bc}{d}\right)\right)\int \frac{\sin\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx - \frac{1}{4}\,\mathrm{si}$$
$$= -\frac{\mathrm{Ci}\left(\frac{3bc}{d}+3bx\right)\sin\left(3a-\frac{3bc}{d}\right)}{4d} + \frac{3\mathrm{Ci}\left(\frac{bc}{d}+bx\right)\sin\left(a-\frac{bc}{d}\right)}{4d} + \frac{3\cos\left(a-\frac{bc}{d}\right)\mathrm{Si}\left(\frac{bc}{d}+bx\right)}{4d} -$$

Mathematica [A] time = 0.25, size = 102, normalized size = 0.84

$$-\frac{\sin\left(3a-\frac{3bc}{d}\right)\mathrm{Ci}\left(\frac{3b(c+dx)}{d}\right) - 3\sin\left(a-\frac{bc}{d}\right)\mathrm{Ci}\left(b\left(\frac{c}{d}+x\right)\right) - 3\cos\left(a-\frac{bc}{d}\right)\mathrm{Si}\left(b\left(\frac{c}{d}+x\right)\right) + \cos\left(3a-\frac{3bc}{d}\right)\mathrm{Si}\left(\frac{3b(c\right.}{}}{4d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3/(c + d*x),x]
```

```
[Out] -1/4*(CosIntegral[(3*b*(c + d*x))/d]*Sin[3*a - (3*b*c)/d] - 3*CosIntegral[b
*(c/d + x)]*Sin[a - (b*c)/d] - 3*Cos[a - (b*c)/d]*SinIntegral[b*(c/d + x)]
+ Cos[3*a - (3*b*c)/d]*SinIntegral[(3*b*(c + d*x))/d])/d
```

fricas [A] time = 0.60, size = 154, normalized size = 1.27

$$\frac{3\left(\mathrm{Ci}\left(\frac{bdx+bc}{d}\right) + \mathrm{Ci}\left(-\frac{bdx+bc}{d}\right)\right)\sin\left(-\frac{bc-ad}{d}\right) - \left(\mathrm{Ci}\left(\frac{3(bdx+bc)}{d}\right) + \mathrm{Ci}\left(-\frac{3(bdx+bc)}{d}\right)\right)\sin\left(-\frac{3(bc-ad)}{d}\right) - 2\cos\left(-\frac{3(bc-ad)}{d}\right.}{8d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c),x, algorithm="fricas")
```

```
[Out] 1/8*(3*(cos_integral((b*d*x + b*c)/d) + cos_integral(-(b*d*x + b*c)/d))*sin
(-(b*c - a*d)/d) - (cos_integral(3*(b*d*x + b*c)/d) + cos_integral(-3*(b*d*
x + b*c)/d))*sin(-3*(b*c - a*d)/d) - 2*cos(-3*(b*c - a*d)/d)*sin_integral(3
*(b*d*x + b*c)/d) + 6*cos(-(b*c - a*d)/d)*sin_integral((b*d*x + b*c)/d))/d
```

giac [C] time = 1.51, size = 6296, normalized size = 52.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c),x, algorithm="giac")
```

```
[Out] -1/8*(imag_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*ta
n(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 - 3*imag_part(cos_integral(b*x + b*c/d))*ta
n(3/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + 3*imag_part(cos
_integral(-b*x - b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2
*b*c/d)^2 - imag_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)^2*tan(1/2*
a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + 2*sin_integral(3*(b*d*x + b*c)/d)*
tan(3/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 - 6*sin_integra
l((b*d*x + b*c)/d)*tan(3/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d
)^2 - 6*real_part(cos_integral(b*x + b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(
3/2*b*c/d)^2*tan(1/2*b*c/d) - 6*real_part(cos_integral(-b*x - b*c/d))*tan(3
/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d) + 2*real_part(cos_inte
gral(3*b*x + 3*b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)*tan(1/2*b*c
/d)^2 + 2*real_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)^2*tan(1/2*a)
^2*tan(3/2*b*c/d)*tan(1/2*b*c/d)^2 + 6*real_part(cos_integral(b*x + b*c/d))
*tan(3/2*a)^2*tan(1/2*a)*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + 6*real_part(co
s_integral(-b*x - b*c/d))*tan(3/2*a)^2*tan(1/2*a)*tan(3/2*b*c/d)^2*tan(1/2*
b*c/d)^2 - 2*real_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)*tan(1/2*a)
^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 - 2*real_part(cos_integral(-3*b*x - 3*
b*c/d))*tan(3/2*a)*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + imag_pa
rt(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)^
2 + 3*imag_part(cos_integral(b*x + b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(3/
2*b*c/d)^2 - 3*imag_part(cos_integral(-b*x - b*c/d))*tan(3/2*a)^2*tan(1/2*a
)^2*tan(3/2*b*c/d)^2 - imag_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)
^2*tan(1/2*a)^2*tan(3/2*b*c/d)^2 + 2*sin_integral(3*(b*d*x + b*c)/d)*tan(3/
2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)^2 + 6*sin_integral((b*d*x + b*c)/d)*tan(
3/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)^2 - 12*imag_part(cos_integral(b*x + b*
c/d))*tan(3/2*a)^2*tan(1/2*a)*tan(3/2*b*c/d)^2*tan(1/2*b*c/d) + 12*imag_par
t(cos_integral(-b*x - b*c/d))*tan(3/2*a)^2*tan(1/2*a)*tan(3/2*b*c/d)^2*tan(
1/2*b*c/d) - 24*sin_integral((b*d*x + b*c)/d)*tan(3/2*a)^2*tan(1/2*a)*tan(3
/2*b*c/d)^2*tan(1/2*b*c/d) - imag_part(cos_integral(3*b*x + 3*b*c/d))*tan(3
/2*a)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 - 3*imag_part(cos_integral(b*x + b*c/
d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 3*imag_part(cos_integral(-
b*x - b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + imag_part(cos_in
```

tegral(-3*b*x - 3*b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 - 2*si
n_integral(3*(b*d*x + b*c)/d)*tan(3/2*a)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 -
6*sin_integral((b*d*x + b*c)/d)*tan(3/2*a)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2
+ 4*imag_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)*tan(1/2*a)^2*tan(3/
2*b*c/d)*tan(1/2*b*c/d)^2 - 4*imag_part(cos_integral(-3*b*x - 3*b*c/d))*tan
(3/2*a)*tan(1/2*a)^2*tan(3/2*b*c/d)*tan(1/2*b*c/d)^2 + 8*sin_integral(3*(b*
d*x + b*c)/d)*tan(3/2*a)*tan(1/2*a)^2*tan(3/2*b*c/d)*tan(1/2*b*c/d)^2 + ima
g_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2
*b*c/d)^2 + 3*imag_part(cos_integral(b*x + b*c/d))*tan(3/2*a)^2*tan(3/2*b*c
/d)^2*tan(1/2*b*c/d)^2 - 3*imag_part(cos_integral(-b*x - b*c/d))*tan(3/2*a)
^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 - imag_part(cos_integral(-3*b*x - 3*b*
c/d))*tan(3/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + 2*sin_integral(3*(b*
d*x + b*c)/d)*tan(3/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + 6*sin_integr
al((b*d*x + b*c)/d)*tan(3/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 - imag_p
art(cos_integral(3*b*x + 3*b*c/d))*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*
c/d)^2 - 3*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*a)^2*tan(3/2*b*c/d)
^2*tan(1/2*b*c/d)^2 + 3*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2*
tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + imag_part(cos_integral(-3*b*x - 3*b*c/d
))*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 - 2*sin_integral(3*(b*d*x
 + b*c)/d)*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 - 6*sin_integral(
(b*d*x + b*c)/d)*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + 2*real_pa
rt(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)
+ 2*real_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan
(3/2*b*c/d) - 6*real_part(cos_integral(b*x + b*c/d))*tan(3/2*a)^2*tan(1/2*a
)*tan(3/2*b*c/d)^2 - 6*real_part(cos_integral(-b*x - b*c/d))*tan(3/2*a)^2*t
an(1/2*a)*tan(3/2*b*c/d)^2 - 2*real_part(cos_integral(3*b*x + 3*b*c/d))*tan
(3/2*a)*tan(1/2*a)^2*tan(3/2*b*c/d)^2 - 2*real_part(cos_integral(-3*b*x - 3
*b*c/d))*tan(3/2*a)*tan(1/2*a)^2*tan(3/2*b*c/d)^2 - 6*real_part(cos_integra
l(b*x + b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(1/2*b*c/d) - 6*real_part(cos_
integral(-b*x - b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2*tan(1/2*b*c/d) + 6*real_p
art(cos_integral(b*x + b*c/d))*tan(3/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)
 + 6*real_part(cos_integral(-b*x - b*c/d))*tan(3/2*a)^2*tan(3/2*b*c/d)^2*ta
n(1/2*b*c/d) - 6*real_part(cos_integral(b*x + b*c/d))*tan(1/2*a)^2*tan(3/2*
b*c/d)^2*tan(1/2*b*c/d) - 6*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*a
)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d) + 6*real_part(cos_integral(b*x + b*c/d)
)*tan(3/2*a)^2*tan(1/2*a)*tan(1/2*b*c/d)^2 + 6*real_part(cos_integral(-b*x
- b*c/d))*tan(3/2*a)^2*tan(1/2*a)*tan(1/2*b*c/d)^2 + 2*real_part(cos_integr
al(3*b*x + 3*b*c/d))*tan(3/2*a)*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 2*real_part
(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)*tan(1/2*a)^2*tan(1/2*b*c/d)^2 +
 2*real_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)^2*tan(3/2*b*c/d)*tan
(1/2*b*c/d)^2 + 2*real_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)^2*ta
n(3/2*b*c/d)*tan(1/2*b*c/d)^2 - 2*real_part(cos_integral(3*b*x + 3*b*c/d))*
tan(1/2*a)^2*tan(3/2*b*c/d)*tan(1/2*b*c/d)^2 - 2*real_part(cos_integral(-3*
b*x - 3*b*c/d))*tan(1/2*a)^2*tan(3/2*b*c/d)*tan(1/2*b*c/d)^2 - 2*real_part(
cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2

```
 - 2*real_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)*tan(3/2*b*c/d)^2*
tan(1/2*b*c/d)^2 + 6*real_part(cos_integral(b*x + b*c/d))*tan(1/2*a)*tan(3/
2*b*c/d)^2*tan(1/2*b*c/d)^2 + 6*real_part(cos_integral(-b*x - b*c/d))*tan(1
/2*a)*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 - imag_part(cos_integral(3*b*x + 3*
b*c/d))*tan(3/2*a)^2*tan(1/2*a)^2 + 3*imag_part(cos_integral(b*x + b*c/d))*
tan(3/2*a)^2*tan(1/2*a)^2 - 3*imag_part(cos_integral(-b*x - b*c/d))*tan(3/2
*a)^2*tan(1/2*a)^2 + imag_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)^2
*tan(1/2*a)^2 - 2*sin_integral(3*(b*d*x + b*c)/d)*tan(3/2*a)^2*tan(1/2*a)^2
 + 6*sin_integral((b*d*x + b*c)/d)*tan(3/2*a)^2*tan(1/2*a)^2 + 4*imag_part(
cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)*tan(1/2*a)^2*tan(3/2*b*c/d) - 4*i
mag_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)*tan(1/2*a)^2*tan(3/2*b*
c/d) + 8*sin_integral(3*(b*d*x + b*c)/d)*tan(3/2*a)*tan(1/2*a)^2*tan(3/2*b*
c/d) + imag_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)^2*tan(3/2*b*c/d)
^2 - 3*imag_part(cos_integral(b*x + b*c/d))*tan(3/2*a)^2*tan(3/2*b*c/d)^2 +
 3*imag_part(cos_integral(-b*x - b*c/d))*tan(3/2*a)^2*tan(3/2*b*c/d)^2 - im
ag_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)^2*tan(3/2*b*c/d)^2 + 2*s
in_integral(3*(b*d*x + b*c)/d)*tan(3/2*a)^2*tan(3/2*b*c/d)^2 - 6*sin_integr
al((b*d*x + b*c)/d)*tan(3/2*a)^2*tan(3/2*b*c/d)^2 - imag_part(cos_integral(
3*b*x + 3*b*c/d))*tan(1/2*a)^2*tan(3/2*b*c/d)^2 + 3*imag_part(cos_integral(
b*x + b*c/d))*tan(1/2*a)^2*tan(3/2*b*c/d)^2 - 3*imag_part(cos_integral(-b*x
 - b*c/d))*tan(1/2*a)^2*tan(3/2*b*c/d)^2 + imag_part(cos_integral(-3*b*x -
3*b*c/d))*tan(1/2*a)^2*tan(3/2*b*c/d)^2 - 2*sin_integral(3*(b*d*x + b*c)/d)
*tan(1/2*a)^2*tan(3/2*b*c/d)^2 + 6*sin_integral((b*d*x + b*c)/d)*tan(1/2*a)
^2*tan(3/2*b*c/d)^2 - 12*imag_part(cos_integral(b*x + b*c/d))*tan(3/2*a)^2*
tan(1/2*a)*tan(1/2*b*c/d) + 12*imag_part(cos_integral(-b*x - b*c/d))*tan(3/
2*a)^2*tan(1/2*a)*tan(1/2*b*c/d) - 24*sin_integral((b*d*x + b*c)/d)*tan(3/2
*a)^2*tan(1/2*a)*tan(1/2*b*c/d) - 12*imag_part(cos_integral(b*x + b*c/d))*t
an(1/2*a)*tan(3/2*b*c/d)^2*tan(1/2*b*c/d) + 12*imag_part(cos_integral(-b*x
- b*c/d))*tan(1/2*a)*tan(3/2*b*c/d)^2*tan(1/2*b*c/d) - 24*sin_integral((b*d
*x + b*c)/d)*tan(1/2*a)*tan(3/2*b*c/d)^2*tan(1/2*b*c/d) - imag_part(cos_int
egral(3*b*x + 3*b*c/d))*tan(3/2*a)^2*tan(1/2*b*c/d)^2 + 3*imag_part(cos_int
egral(b*x + b*c/d))*tan(3/2*a)^2*tan(1/2*b*c/d)^2 - 3*imag_part(cos_integra
l(-b*x - b*c/d))*tan(3/2*a)^2*tan(1/2*b*c/d)^2 + imag_part(cos_integral(-3*
b*x - 3*b*c/d))*tan(3/2*a)^2*tan(1/2*b*c/d)^2 - 2*sin_integral(3*(b*d*x + b
*c)/d)*tan(3/2*a)^2*tan(1/2*b*c/d)^2 + 6*sin_integral((b*d*x + b*c)/d)*tan(
3/2*a)^2*tan(1/2*b*c/d)^2 + imag_part(cos_integral(3*b*x + 3*b*c/d))*tan(1/
2*a)^2*tan(1/2*b*c/d)^2 - 3*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*a)
^2*tan(1/2*b*c/d)^2 + 3*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2*
tan(1/2*b*c/d)^2 - imag_part(cos_integral(-3*b*x - 3*b*c/d))*tan(1/2*a)^2*t
an(1/2*b*c/d)^2 + 2*sin_integral(3*(b*d*x + b*c)/d)*tan(1/2*a)^2*tan(1/2*b*
c/d)^2 - 6*sin_integral((b*d*x + b*c)/d)*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + 4*
imag_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)*tan(3/2*b*c/d)*tan(1/2*
b*c/d)^2 - 4*imag_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)*tan(3/2*b
*c/d)*tan(1/2*b*c/d)^2 + 8*sin_integral(3*(b*d*x + b*c)/d)*tan(3/2*a)*tan(3
/2*b*c/d)*tan(1/2*b*c/d)^2 - imag_part(cos_integral(3*b*x + 3*b*c/d))*tan(3
```

/2*b*c/d)^2*tan(1/2*b*c/d)^2 + 3*imag_part(cos_integral(b*x + b*c/d))*tan(3
/2*b*c/d)^2*tan(1/2*b*c/d)^2 - 3*imag_part(cos_integral(-b*x - b*c/d))*tan(
3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + imag_part(cos_integral(-3*b*x - 3*b*c/d))*t
an(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 - 2*sin_integral(3*(b*d*x + b*c)/d)*tan(3/
2*b*c/d)^2*tan(1/2*b*c/d)^2 + 6*sin_integral((b*d*x + b*c)/d)*tan(3/2*b*c/d
)^2*tan(1/2*b*c/d)^2 - 6*real_part(cos_integral(b*x + b*c/d))*tan(3/2*a)^2*
tan(1/2*a) - 6*real_part(cos_integral(-b*x - b*c/d))*tan(3/2*a)^2*tan(1/2*a
) + 2*real_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)*tan(1/2*a)^2 + 2*
real_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)*tan(1/2*a)^2 + 2*real_
part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)^2*tan(3/2*b*c/d) + 2*real_pa
rt(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)^2*tan(3/2*b*c/d) - 2*real_par
t(cos_integral(3*b*x + 3*b*c/d))*tan(1/2*a)^2*tan(3/2*b*c/d) - 2*real_part(
cos_integral(-3*b*x - 3*b*c/d))*tan(1/2*a)^2*tan(3/2*b*c/d) - 2*real_part(c
os_integral(3*b*x + 3*b*c/d))*tan(3/2*a)*tan(3/2*b*c/d)^2 - 2*real_part(cos
_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)*tan(3/2*b*c/d)^2 - 6*real_part(cos_
integral(b*x + b*c/d))*tan(1/2*a)*tan(3/2*b*c/d)^2 - 6*real_part(cos_integr
al(-b*x - b*c/d))*tan(1/2*a)*tan(3/2*b*c/d)^2 + 6*real_part(cos_integral(b*
x + b*c/d))*tan(3/2*a)^2*tan(1/2*b*c/d) + 6*real_part(cos_integral(-b*x - b
*c/d))*tan(3/2*a)^2*tan(1/2*b*c/d) - 6*real_part(cos_integral(b*x + b*c/d))
*tan(1/2*a)^2*tan(1/2*b*c/d) - 6*real_part(cos_integral(-b*x - b*c/d))*tan(
1/2*a)^2*tan(1/2*b*c/d) + 6*real_part(cos_integral(b*x + b*c/d))*tan(3/2*b*
c/d)^2*tan(1/2*b*c/d) + 6*real_part(cos_integral(-b*x - b*c/d))*tan(3/2*b*c
/d)^2*tan(1/2*b*c/d) + 2*real_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a
)*tan(1/2*b*c/d)^2 + 2*real_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a)
*tan(1/2*b*c/d)^2 + 6*real_part(cos_integral(b*x + b*c/d))*tan(1/2*a)*tan(1
/2*b*c/d)^2 + 6*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*a)*tan(1/2*b*
c/d)^2 - 2*real_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*b*c/d)*tan(1/2*
b*c/d)^2 - 2*real_part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*b*c/d)*tan(1
/2*b*c/d)^2 - imag_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a)^2 - 3*ima
g_part(cos_integral(b*x + b*c/d))*tan(3/2*a)^2 + 3*imag_part(cos_integral(-
b*x - b*c/d))*tan(3/2*a)^2 + imag_part(cos_integral(-3*b*x - 3*b*c/d))*tan(
3/2*a)^2 - 2*sin_integral(3*(b*d*x + b*c)/d)*tan(3/2*a)^2 - 6*sin_integral(
(b*d*x + b*c)/d)*tan(3/2*a)^2 + imag_part(cos_integral(3*b*x + 3*b*c/d))*ta
n(1/2*a)^2 + 3*imag_part(cos_integral(b*x + b*c/d))*tan(1/2*a)^2 - 3*imag_p
art(cos_integral(-b*x - b*c/d))*tan(1/2*a)^2 - imag_part(cos_integral(-3*b*
x - 3*b*c/d))*tan(1/2*a)^2 + 2*sin_integral(3*(b*d*x + b*c)/d)*tan(1/2*a)^2
 + 6*sin_integral((b*d*x + b*c)/d)*tan(1/2*a)^2 + 4*imag_part(cos_integral(
3*b*x + 3*b*c/d))*tan(3/2*a)*tan(3/2*b*c/d) - 4*imag_part(cos_integral(-3*b
*x - 3*b*c/d))*tan(3/2*a)*tan(3/2*b*c/d) + 8*sin_integral(3*(b*d*x + b*c)/d
)*tan(3/2*a)*tan(3/2*b*c/d) - imag_part(cos_integral(3*b*x + 3*b*c/d))*tan(
3/2*b*c/d)^2 - 3*imag_part(cos_integral(b*x + b*c/d))*tan(3/2*b*c/d)^2 + 3*
imag_part(cos_integral(-b*x - b*c/d))*tan(3/2*b*c/d)^2 + imag_part(cos_inte
gral(-3*b*x - 3*b*c/d))*tan(3/2*b*c/d)^2 - 2*sin_integral(3*(b*d*x + b*c)/d
)*tan(3/2*b*c/d)^2 - 6*sin_integral((b*d*x + b*c)/d)*tan(3/2*b*c/d)^2 - 12*
imag_part(cos_integral(b*x + b*c/d))*tan(1/2*a)*tan(1/2*b*c/d) + 12*imag_pa

```
rt(cos_integral(-b*x - b*c/d))*tan(1/2*a)*tan(1/2*b*c/d) - 24*sin_integral(
(b*d*x + b*c)/d)*tan(1/2*a)*tan(1/2*b*c/d) + imag_part(cos_integral(3*b*x +
 3*b*c/d))*tan(1/2*b*c/d)^2 + 3*imag_part(cos_integral(b*x + b*c/d))*tan(1/
2*b*c/d)^2 - 3*imag_part(cos_integral(-b*x - b*c/d))*tan(1/2*b*c/d)^2 - ima
g_part(cos_integral(-3*b*x - 3*b*c/d))*tan(1/2*b*c/d)^2 + 2*sin_integral(3*
(b*d*x + b*c)/d)*tan(1/2*b*c/d)^2 + 6*sin_integral((b*d*x + b*c)/d)*tan(1/2
*b*c/d)^2 + 2*real_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*a) + 2*real_
part(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*a) - 6*real_part(cos_integral(
b*x + b*c/d))*tan(1/2*a) - 6*real_part(cos_integral(-b*x - b*c/d))*tan(1/2*
a) - 2*real_part(cos_integral(3*b*x + 3*b*c/d))*tan(3/2*b*c/d) - 2*real_par
t(cos_integral(-3*b*x - 3*b*c/d))*tan(3/2*b*c/d) + 6*real_part(cos_integral
(b*x + b*c/d))*tan(1/2*b*c/d) + 6*real_part(cos_integral(-b*x - b*c/d))*tan
(1/2*b*c/d) + imag_part(cos_integral(3*b*x + 3*b*c/d)) - 3*imag_part(cos_in
tegral(b*x + b*c/d)) + 3*imag_part(cos_integral(-b*x - b*c/d)) - imag_part(
cos_integral(-3*b*x - 3*b*c/d)) + 2*sin_integral(3*(b*d*x + b*c)/d) - 6*sin
_integral((b*d*x + b*c)/d))/(d*tan(3/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)^2*t
an(1/2*b*c/d)^2 + d*tan(3/2*a)^2*tan(1/2*a)^2*tan(3/2*b*c/d)^2 + d*tan(3/2*
a)^2*tan(1/2*a)^2*tan(1/2*b*c/d)^2 + d*tan(3/2*a)^2*tan(3/2*b*c/d)^2*tan(1/
2*b*c/d)^2 + d*tan(1/2*a)^2*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + d*tan(3/2*a
)^2*tan(1/2*a)^2 + d*tan(3/2*a)^2*tan(3/2*b*c/d)^2 + d*tan(1/2*a)^2*tan(3/2
*b*c/d)^2 + d*tan(3/2*a)^2*tan(1/2*b*c/d)^2 + d*tan(1/2*a)^2*tan(1/2*b*c/d)
^2 + d*tan(3/2*b*c/d)^2*tan(1/2*b*c/d)^2 + d*tan(3/2*a)^2 + d*tan(1/2*a)^2
+ d*tan(3/2*b*c/d)^2 + d*tan(1/2*b*c/d)^2 + d)
```

maple [A] time = 0.02, size = 167, normalized size = 1.38

$$\frac{-\frac{b\left(\frac{3\,\mathrm{Si}\left(3bx+3a+\frac{-3da+3cb}{d}\right)\cos\left(\frac{-3da+3cb}{d}\right)}{d}-\frac{3\,\mathrm{Ci}\left(3bx+3a+\frac{-3da+3cb}{d}\right)\sin\left(\frac{-3da+3cb}{d}\right)}{d}\right)}{12}+\frac{3b\left(\frac{\mathrm{Si}\left(bx+a+\frac{-da+cb}{d}\right)\cos\left(\frac{-da+cb}{d}\right)}{d}-\frac{\mathrm{Ci}\left(bx+a+\frac{-da+cb}{d}\right)\sin\left(\frac{-da+cb}{d}\right)}{d}\right)}{4}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3/(d*x+c),x)
```

```
[Out] 1/b*(-1/12*b*(3*Si(3*b*x+3*a+3*(-a*d+b*c)/d)*cos(3*(-a*d+b*c)/d)/d-3*Ci(3*b
*x+3*a+3*(-a*d+b*c)/d)*sin(3*(-a*d+b*c)/d)/d)+3/4*b*(Si(b*x+a+(-a*d+b*c)/d)
*cos((-a*d+b*c)/d)/d-Ci(b*x+a+(-a*d+b*c)/d)*sin((-a*d+b*c)/d)/d))
```

maxima [C] time = 0.51, size = 274, normalized size = 2.26

$$b\left(-3i\,E_1\left(\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)+3i\,E_1\left(-\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)\right)\cos\left(-\frac{bc-ad}{d}\right)+b\left(i\,E_1\left(\frac{3i\,bc+3i\,(bx+a)d-3i\,ad}{d}\right)-i\,E_1\left(-\frac{3i\,bc+3i\,(\cdots\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c),x, algorithm="maxima")
```

```
[Out] 1/8*(b*(-3*I*exp_integral_e(1, (I*b*c + I*(b*x + a)*d - I*a*d)/d) + 3*I*exp
_integral_e(1, -(I*b*c + I*(b*x + a)*d - I*a*d)/d))*cos(-(b*c - a*d)/d) + b
*(I*exp_integral_e(1, (3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d) - I*exp_inte
gral_e(1, -(3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d))*cos(-3*(b*c - a*d)/d)
- 3*b*(exp_integral_e(1, (I*b*c + I*(b*x + a)*d - I*a*d)/d) + exp_integral_
e(1, -(I*b*c + I*(b*x + a)*d - I*a*d)/d))*sin(-(b*c - a*d)/d) + b*(exp_inte
gral_e(1, (3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d) + exp_integral_e(1, -(3*
I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d))*sin(-3*(b*c - a*d)/d))/(b*d)
```

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

$$\int \frac{\sin(a+b\,x)^3}{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3/(c + d*x),x)
```

```
[Out] int(sin(a + b*x)^3/(c + d*x), x)
```

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

$$\int \frac{\sin^3(a+bx)}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3/(d*x+c),x)
```

```
[Out] Integral(sin(a + b*x)**3/(c + d*x), x)
```

3.21 $\int \frac{\sin^3(a+bx)}{(c+dx)^2} \, dx$

Optimal. Leaf size=145

$$\frac{3b\cos\left(a-\frac{bc}{d}\right)\text{Ci}\left(\frac{bc}{d}+bx\right)}{4d^2}-\frac{3b\cos\left(3a-\frac{3bc}{d}\right)\text{Ci}\left(\frac{3bc}{d}+3bx\right)}{4d^2}-\frac{3b\sin\left(a-\frac{bc}{d}\right)\text{Si}\left(\frac{bc}{d}+bx\right)}{4d^2}+\frac{3b\sin\left(3a-\frac{3bc}{d}\right)\text{Si}}{4d^2}$$

```
[Out] -3/4*b*Ci(3*b*c/d+3*b*x)*cos(3*a-3*b*c/d)/d^2+3/4*b*Ci(b*c/d+b*x)*cos(a-b*c
/d)/d^2+3/4*b*Si(3*b*c/d+3*b*x)*sin(3*a-3*b*c/d)/d^2-3/4*b*Si(b*c/d+b*x)*si
n(a-b*c/d)/d^2-sin(b*x+a)^3/d/(d*x+c)
```

Rubi [A] time = 0.24, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3313, 3303, 3299, 3302}

$$\frac{3b\cos\left(a-\frac{bc}{d}\right)\text{CosIntegral}\left(\frac{bc}{d}+bx\right)}{4d^2}-\frac{3b\cos\left(3a-\frac{3bc}{d}\right)\text{CosIntegral}\left(\frac{3bc}{d}+3bx\right)}{4d^2}-\frac{3b\sin\left(a-\frac{bc}{d}\right)\text{Si}\left(\frac{bc}{d}+bx\right)}{4d^2}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3/(c + d*x)^2,x]
```

```
[Out] (3*b*Cos[a - (b*c)/d]*CosIntegral[(b*c)/d + b*x])/(4*d^2) - (3*b*Cos[3*a -
(3*b*c)/d]*CosIntegral[(3*b*c)/d + 3*b*x])/(4*d^2) - Sin[a + b*x]^3/(d*(c +
 d*x)) - (3*b*Sin[a - (b*c)/d]*SinIntegral[(b*c)/d + b*x])/(4*d^2) + (3*b*S
in[3*a - (3*b*c)/d]*SinIntegral[(3*b*c)/d + 3*b*x])/(4*d^2)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
```

```
NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rubi steps

$$\int \frac{\sin^3(a+bx)}{(c+dx)^2}\,dx = -\frac{\sin^3(a+bx)}{d(c+dx)} + \frac{(3b)\int \left(\frac{\cos(a+bx)}{4(c+dx)} - \frac{\cos(3a+3bx)}{4(c+dx)}\right)dx}{d}$$

$$= -\frac{\sin^3(a+bx)}{d(c+dx)} + \frac{(3b)\int \frac{\cos(a+bx)}{c+dx}\,dx}{4d} - \frac{(3b)\int \frac{\cos(3a+3bx)}{c+dx}\,dx}{4d}$$

$$= -\frac{\sin^3(a+bx)}{d(c+dx)} - \frac{\left(3b\cos\left(3a-\frac{3bc}{d}\right)\right)\int \frac{\cos\left(\frac{3bc}{d}+3bx\right)}{c+dx}\,dx}{4d} + \frac{\left(3b\cos\left(a-\frac{bc}{d}\right)\right)\int \frac{\cos\left(\frac{bc}{d}+bx\right)}{c+dx}\,dx}{4d} +$$

$$= \frac{3b\cos\left(a-\frac{bc}{d}\right)\text{Ci}\left(\frac{bc}{d}+bx\right)}{4d^2} - \frac{3b\cos\left(3a-\frac{3bc}{d}\right)\text{Ci}\left(\frac{3bc}{d}+3bx\right)}{4d^2} - \frac{\sin^3(a+bx)}{d(c+dx)} - \frac{3b\sin\left(a-\right.}{}$$

Mathematica [A] time = 1.07, size = 175, normalized size = 1.21

$$\frac{3b(c+dx)\cos\left(a-\frac{bc}{d}\right)\text{Ci}\left(b\left(\frac{c}{d}+x\right)\right) - 3b(c+dx)\cos\left(3a-\frac{3bc}{d}\right)\text{Ci}\left(\frac{3b(c+dx)}{d}\right) - 3b(c+dx)\sin\left(a-\frac{bc}{d}\right)\text{Si}\left(b\left(\frac{c}{d}+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3/(c + d*x)^2,x]
```

```
[Out] (3*b*(c + d*x)*Cos[a - (b*c)/d]*CosIntegral[b*(c/d + x)] - 3*b*(c + d*x)*Co
s[3*a - (3*b*c)/d]*CosIntegral[(3*b*(c + d*x))/d] - 3*d*Cos[b*x]*Sin[a] + d
*Cos[3*b*x]*Sin[3*a] - 3*d*Cos[a]*Sin[b*x] + d*Cos[3*a]*Sin[3*b*x] - 3*b*(c
 + d*x)*Sin[a - (b*c)/d]*SinIntegral[b*(c/d + x)] + 3*b*(c + d*x)*Sin[3*a -
 (3*b*c)/d]*SinIntegral[(3*b*(c + d*x))/d])/(4*d^2*(c + d*x))
```

fricas [A] time = 0.68, size = 238, normalized size = 1.64

$$\frac{6\,(bdx+bc)\sin\left(-\frac{3\,(bc-ad)}{d}\right)\mathrm{Si}\left(\frac{3\,(bdx+bc)}{d}\right)-6\,(bdx+bc)\sin\left(-\frac{bc-ad}{d}\right)\mathrm{Si}\left(\frac{bdx+bc}{d}\right)+3\left((bdx+bc)\,\mathrm{Ci}\left(\frac{bdx+bc}{d}\right)+(bc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] 1/8*(6*(b*d*x + b*c)*sin(-3*(b*c - a*d)/d)*sin_integral(3*(b*d*x + b*c)/d)
- 6*(b*d*x + b*c)*sin(-(b*c - a*d)/d)*sin_integral((b*d*x + b*c)/d) + 3*((b
*d*x + b*c)*cos_integral((b*d*x + b*c)/d) + (b*d*x + b*c)*cos_integral(-(b*
d*x + b*c)/d))*cos(-(b*c - a*d)/d) - 3*((b*d*x + b*c)*cos_integral(3*(b*d*x
 + b*c)/d) + (b*d*x + b*c)*cos_integral(-3*(b*d*x + b*c)/d))*cos(-3*(b*c -
a*d)/d) + 8*(d*cos(b*x + a)^2 - d)*sin(b*x + a))/(d^3*x + c*d^2)
```

giac [B] time = 1.06, size = 1000, normalized size = 6.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^2,x, algorithm="giac")
```

```
[Out] -1/4*(3*(d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c))*b^2*cos(-3*(b*c - a*d
)/d)*cos_integral(3*((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c -
a*d)/d) + 3*b^3*c*cos(-3*(b*c - a*d)/d)*cos_integral(3*((d*x + c)*(b - b*c/
(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) - 3*a*b^2*d*cos(-3*(b*c - a*d)/d
)*cos_integral(3*((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d
)/d) - 3*(d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c))*b^2*cos(-(b*c - a*d)
/d)*cos_integral(((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d
)/d) - 3*b^3*c*cos(-(b*c - a*d)/d)*cos_integral(((d*x + c)*(b - b*c/(d*x +
c) + a*d/(d*x + c)) + b*c - a*d)/d) + 3*a*b^2*d*cos(-(b*c - a*d)/d)*cos_int
egral(((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) - 3*(d
*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c))*b^2*sin(-(b*c - a*d)/d)*sin_int
egral(-((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) - 3*b
^3*c*sin(-(b*c - a*d)/d)*sin_integral(-((d*x + c)*(b - b*c/(d*x + c) + a*d/
(d*x + c)) + b*c - a*d)/d) + 3*a*b^2*d*sin(-(b*c - a*d)/d)*sin_integral(-((
d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) + 3*(d*x + c)*
(b - b*c/(d*x + c) + a*d/(d*x + c))*b^2*sin(-3*(b*c - a*d)/d)*sin_integral(
-3*((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) + 3*b^3*c
*sin(-3*(b*c - a*d)/d)*sin_integral(-3*((d*x + c)*(b - b*c/(d*x + c) + a*d/
(d*x + c)) + b*c - a*d)/d) - 3*a*b^2*d*sin(-3*(b*c - a*d)/d)*sin_integral(-
3*((d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c)) + b*c - a*d)/d) - 3*b^2*d*
sin(-(d*x + c)*(b - b*c/(d*x + c) + a*d/(d*x + c))/d) + b^2*d*sin(-3*(d*x +
```

```
c)*(b - b*c/(d*x + c) + a*d/(d*x + c))/d))*d^2/(((d*x + c)*(b - b*c/(d*x +
c) + a*d/(d*x + c))*d^4 + b*c*d^4 - a*d^5)*b)
```

maple [A] time = 0.02, size = 240, normalized size = 1.66

$$-\frac{-\frac{b^2\left(-\frac{3\sin(3bx+3a)}{((bx+a)d-da+cb)d}+\frac{\frac{9\,\mathrm{Si}\left(3bx+3a+\frac{-3da+3cb}{d}\right)\sin\left(\frac{-3da+3cb}{d}\right)}{d}+\frac{9\,\mathrm{Ci}\left(3bx+3a+\frac{-3da+3cb}{d}\right)\cos\left(\frac{-3da+3cb}{d}\right)}{d}}{d}\right)}{12}+\frac{3b^2\left(-\frac{\sin(bx+a)}{((bx+a)d-da+cb)d}+\frac{\mathrm{Si}\left(bx+a+\frac{-da+cb}{d}\right)\sin\left(\frac{-da}{}\right.}{d}\right.}{4}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3/(d*x+c)^2,x)
```

```
[Out] 1/b*(-1/12*b^2*(-3*sin(3*b*x+3*a)/((b*x+a)*d-d*a+c*b)/d+3*(3*Si(3*b*x+3*a+3
*(-a*d+b*c)/d)*sin(3*(-a*d+b*c)/d)/d+3*Ci(3*b*x+3*a+3*(-a*d+b*c)/d)*cos(3*(
-a*d+b*c)/d)/d)/d)+3/4*b^2*(-sin(b*x+a)/((b*x+a)*d-d*a+c*b)/d+(Si(b*x+a+(-a
*d+b*c)/d)*sin((-a*d+b*c)/d)/d+Ci(b*x+a+(-a*d+b*c)/d)*cos((-a*d+b*c)/d)/d)/
d))
```

maxima [C] time = 0.58, size = 301, normalized size = 2.08

$$\frac{b^2\left(-3i\,E_2\left(\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)+3i\,E_2\left(-\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)\right)\cos\left(-\frac{bc-ad}{d}\right)+b^2\left(i\,E_2\left(\frac{3i\,bc+3i\,(bx+a)d-3i\,ad}{d}\right)-i\,E_2\left(-\frac{3i\,bc+3i\,(}{}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] 1/8*(b^2*(-3*I*exp_integral_e(2, (I*b*c + I*(b*x + a)*d - I*a*d)/d) + 3*I*e
xp_integral_e(2, -(I*b*c + I*(b*x + a)*d - I*a*d)/d))*cos(-(b*c - a*d)/d) +
 b^2*(I*exp_integral_e(2, (3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d) - I*exp_
integral_e(2, -(3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d))*cos(-3*(b*c - a*d)
/d) - 3*b^2*(exp_integral_e(2, (I*b*c + I*(b*x + a)*d - I*a*d)/d) + exp_int
egral_e(2, -(I*b*c + I*(b*x + a)*d - I*a*d)/d))*sin(-(b*c - a*d)/d) + b^2*(
exp_integral_e(2, (3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d) + exp_integral_e
(2, -(3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d))*sin(-3*(b*c - a*d)/d))/((b*c
*d + (b*x + a)*d^2 - a*d^2)*b)
```

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

$$\int \frac{\sin\left(a+b\,x\right)^3}{\left(c+d\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3/(c + d*x)^2,x)
```

```
[Out] int(sin(a + b*x)^3/(c + d*x)^2, x)
```

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

$$\int \frac{\sin^3(a+bx)}{(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3/(d*x+c)**2,x)
```

```
[Out] Integral(sin(a + b*x)**3/(c + d*x)**2, x)
```

3.22 $\int \frac{\sin^3(a+bx)}{(c+dx)^3} dx$

Optimal. Leaf size=184

$$\frac{9b^2 \sin\left(3a - \frac{3bc}{d}\right) \text{Ci}\left(\frac{3bc}{d} + 3bx\right)}{8d^3} - \frac{3b^2 \sin\left(a - \frac{bc}{d}\right) \text{Ci}\left(\frac{bc}{d} + bx\right)}{8d^3} - \frac{3b^2 \cos\left(a - \frac{bc}{d}\right) \text{Si}\left(\frac{bc}{d} + bx\right)}{8d^3} + \frac{9b^2 \cos\left(3a - \frac{3bc}{d}\right)}{8d^3}$$

```
[Out] -3/8*b^2*cos(a-b*c/d)*Si(b*c/d+b*x)/d^3+9/8*b^2*cos(3*a-3*b*c/d)*Si(3*b*c/d
+3*b*x)/d^3+9/8*b^2*Ci(3*b*c/d+3*b*x)*sin(3*a-3*b*c/d)/d^3-3/8*b^2*Ci(b*c/d
+b*x)*sin(a-b*c/d)/d^3-3/2*b*cos(b*x+a)*sin(b*x+a)^2/d^2/(d*x+c)-1/2*sin(b*
x+a)^3/d/(d*x+c)^2
```

Rubi [A] time = 0.35, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.312$, Rules used = {3314, 3303, 3299, 3302, 3312}

$$\frac{9b^2 \sin\left(3a - \frac{3bc}{d}\right) \text{CosIntegral}\left(\frac{3bc}{d} + 3bx\right)}{8d^3} - \frac{3b^2 \sin\left(a - \frac{bc}{d}\right) \text{CosIntegral}\left(\frac{bc}{d} + bx\right)}{8d^3} - \frac{3b^2 \cos\left(a - \frac{bc}{d}\right) \text{Si}\left(\frac{bc}{d} + bx\right)}{8d^3}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3/(c + d*x)^3,x]
```

```
[Out] (9*b^2*CosIntegral[(3*b*c)/d + 3*b*x]*Sin[3*a - (3*b*c)/d])/(8*d^3) - (3*b^
2*CosIntegral[(b*c)/d + b*x]*Sin[a - (b*c)/d])/(8*d^3) - (3*b*Cos[a + b*x]*
Sin[a + b*x]^2)/(2*d^2*(c + d*x)) - Sin[a + b*x]^3/(2*d*(c + d*x)^2) - (3*b
^2*Cos[a - (b*c)/d]*SinIntegral[(b*c)/d + b*x])/(8*d^3) + (9*b^2*Cos[3*a -
(3*b*c)/d]*SinIntegral[(3*b*c)/d + 3*b*x])/(8*d^3)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
```

```
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rubi steps

$$\int \frac{\sin^3(a+bx)}{(c+dx)^3}\,dx = -\frac{3b\cos(a+bx)\sin^2(a+bx)}{2d^2(c+dx)} - \frac{\sin^3(a+bx)}{2d(c+dx)^2} + \frac{\left(3b^2\right)\int \frac{\sin(a+bx)}{c+dx}\,dx}{d^2} - \frac{\left(9b^2\right)\int \frac{\sin^3(a+bx)}{c+dx}\,dx}{2d^2}$$

$$= -\frac{3b\cos(a+bx)\sin^2(a+bx)}{2d^2(c+dx)} - \frac{\sin^3(a+bx)}{2d(c+dx)^2} - \frac{\left(9b^2\right)\int \left(\frac{3\sin(a+bx)}{4(c+dx)} - \frac{\sin(3a+3bx)}{4(c+dx)}\right)dx}{2d^2} + \frac{\left(3b^2\right.}{}$$

$$= \frac{3b^2\text{Ci}\left(\frac{bc}{d}+bx\right)\sin\left(a-\frac{bc}{d}\right)}{d^3} - \frac{3b\cos(a+bx)\sin^2(a+bx)}{2d^2(c+dx)} - \frac{\sin^3(a+bx)}{2d(c+dx)^2} + \frac{3b^2\cos\left(a-\right.}{}$$

$$= \frac{3b^2\text{Ci}\left(\frac{bc}{d}+bx\right)\sin\left(a-\frac{bc}{d}\right)}{d^3} - \frac{3b\cos(a+bx)\sin^2(a+bx)}{2d^2(c+dx)} - \frac{\sin^3(a+bx)}{2d(c+dx)^2} + \frac{3b^2\cos\left(a-\right.}{}$$

$$= \frac{9b^2\text{Ci}\left(\frac{3bc}{d}+3bx\right)\sin\left(3a-\frac{3bc}{d}\right)}{8d^3} - \frac{3b^2\text{Ci}\left(\frac{bc}{d}+bx\right)\sin\left(a-\frac{bc}{d}\right)}{8d^3} - \frac{3b\cos(a+bx)\sin^2(a+\right.}{2d^2(c+dx)}$$

Mathematica [A] time = 0.82, size = 221, normalized size = 1.20

$$\frac{6b^2(c+dx)^2\left(3\sin\left(3a-\frac{3bc}{d}\right)\text{Ci}\left(\frac{3b(c+dx)}{d}\right) - \sin\left(a-\frac{bc}{d}\right)\text{Ci}\left(b\left(\frac{c}{d}+x\right)\right) - \cos\left(a-\frac{bc}{d}\right)\text{Si}\left(b\left(\frac{c}{d}+x\right)\right) + 3\cos\left(3a\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3/(c + d*x)^3,x]
```

```
[Out] (-6*d*Cos[b*x]*(b*(c + d*x)*Cos[a] + d*Sin[a]) + 2*d*Cos[3*b*x]*(3*b*(c + d
*x)*Cos[3*a] + d*Sin[3*a]) + 6*d*(-(d*Cos[a]) + b*(c + d*x)*Sin[a])*Sin[b*x
] + 2*d*(d*Cos[3*a] - 3*b*(c + d*x)*Sin[3*a])*Sin[3*b*x] + 6*b^2*(c + d*x)^
2*(3*CosIntegral[(3*b*(c + d*x))/d]*Sin[3*a - (3*b*c)/d] - CosIntegral[b*(c
/d + x)]*Sin[a - (b*c)/d] - Cos[a - (b*c)/d]*SinIntegral[b*(c/d + x)] + 3*C
os[3*a - (3*b*c)/d]*SinIntegral[(3*b*(c + d*x))/d]))/(16*d^3*(c + d*x)^2)
```

fricas [B] time = 0.58, size = 401, normalized size = 2.18

$$24\left(bd^2x+bcd\right)\cos\left(bx+a\right)^3+18\left(b^2d^2x^2+2\,b^2cdx+b^2c^2\right)\cos\left(-\frac{3\,(bc-ad)}{d}\right)\mathrm{Si}\left(\frac{3\,(bdx+bc)}{d}\right)-6\left(b^2d^2x^2+2\,b^2cdx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^3,x, algorithm="fricas")
```

```
[Out] 1/16*(24*(b*d^2*x + b*c*d)*cos(b*x + a)^3 + 18*(b^2*d^2*x^2 + 2*b^2*c*d*x +
 b^2*c^2)*cos(-3*(b*c - a*d)/d)*sin_integral(3*(b*d*x + b*c)/d) - 6*(b^2*d^
2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(-(b*c - a*d)/d)*sin_integral((b*d*x + b*
c)/d) - 24*(b*d^2*x + b*c*d)*cos(b*x + a) + 8*(d^2*cos(b*x + a)^2 - d^2)*si
n(b*x + a) - 3*((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos_integral((b*d*x +
 b*c)/d) + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos_integral(-(b*d*x + b*c
)/d))*sin(-(b*c - a*d)/d) + 9*((b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos_in
tegral(3*(b*d*x + b*c)/d) + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos_integ
ral(-3*(b*d*x + b*c)/d))*sin(-3*(b*c - a*d)/d))/(d^5*x^2 + 2*c*d^4*x + c^2*
d^3)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.02, size = 313, normalized size = 1.70

$$-\frac{\frac{b^{3}\left(-\frac{3\sin(3bx+3a)}{2((bx+a)d-da+cb)^{2}d}+\frac{-\frac{9\cos(3bx+3a)}{2((bx+a)d-da+cb)d}-\frac{9\left(\frac{3\,\mathrm{Si}\left(3bx+3a+\frac{-3da+3cb}{d}\right)\cos\left(\frac{-3da+3cb}{d}\right)}{d}-\frac{3\,\mathrm{Ci}\left(3bx+3a+\frac{-3da+3cb}{d}\right)\sin\left(\frac{-3da+3cb}{d}\right)}{d}\right)}{2d}}{d}\right)}{12}+\frac{3b^{3}\left(-\frac{\sin(bx+a)}{2((bx+a)d-da+cb}\right.}{}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3/(d*x+c)^3,x)
```

```
[Out] 1/b*(-1/12*b^3*(-3/2*sin(3*b*x+3*a)/((b*x+a)*d-d*a+c*b)^2/d+3/2*(-3*cos(3*b
*x+3*a)/((b*x+a)*d-d*a+c*b)/d-3*(3*Si(3*b*x+3*a+3*(-a*d+b*c)/d)*cos(3*(-a*d
+b*c)/d)/d-3*Ci(3*b*x+3*a+3*(-a*d+b*c)/d)*sin(3*(-a*d+b*c)/d)/d)/d)/d)+3/4*
b^3*(-1/2*sin(b*x+a)/((b*x+a)*d-d*a+c*b)^2/d+1/2*(-cos(b*x+a)/((b*x+a)*d-d*
a+c*b)/d-(Si(b*x+a+(-a*d+b*c)/d)*cos((-a*d+b*c)/d)/d-Ci(b*x+a+(-a*d+b*c)/d)
*sin((-a*d+b*c)/d)/d)/d)/d))
```

maxima [C] time = 0.71, size = 336, normalized size = 1.83

$$\frac{b^{3}\left(-3i\,E_{3}\left(\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)+3i\,E_{3}\left(-\frac{i\,bc+i\,(bx+a)d-i\,ad}{d}\right)\right)\cos\left(-\frac{bc-ad}{d}\right)+b^{3}\left(i\,E_{3}\left(\frac{3i\,bc+3i\,(bx+a)d-3i\,ad}{d}\right)-i\,E_{3}\left(-\frac{3i\,bc+3}{}\right.\right.}{8\left(b^{2}c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^3,x, algorithm="maxima")
```

```
[Out] 1/8*(b^3*(-3*I*exp_integral_e(3, (I*b*c + I*(b*x + a)*d - I*a*d)/d) + 3*I*e
xp_integral_e(3, -(I*b*c + I*(b*x + a)*d - I*a*d)/d))*cos(-(b*c - a*d)/d) +
 b^3*(I*exp_integral_e(3, (3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d) - I*exp_
integral_e(3, -(3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d))*cos(-3*(b*c - a*d)
/d) - 3*b^3*(exp_integral_e(3, (I*b*c + I*(b*x + a)*d - I*a*d)/d) + exp_int
egral_e(3, -(I*b*c + I*(b*x + a)*d - I*a*d)/d))*sin(-(b*c - a*d)/d) + b^3*(
exp_integral_e(3, (3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d) + exp_integral_e
(3, -(3*I*b*c + 3*I*(b*x + a)*d - 3*I*a*d)/d))*sin(-3*(b*c - a*d)/d))/((b^2
*c^2*d - 2*a*b*c*d^2 + (b*x + a)^2*d^3 + a^2*d^3 + 2*(b*c*d^2 - a*d^3)*(b*x
 + a))*b)
```

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

$$\int \frac{\sin\left(a+b\,x\right)^3}{\left(c+d\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3/(c + d*x)^3,x)
[Out] int(sin(a + b*x)^3/(c + d*x)^3, x)
```

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

$$\int \frac{\sin^3(a+bx)}{(c+dx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3/(d*x+c)**3,x)
[Out] Integral(sin(a + b*x)**3/(c + d*x)**3, x)
```

3.23 $\int (c+dx)^3 \csc(a+bx)\,dx$

Optimal. Leaf size=185

$$-\frac{6id^3\text{Li}_4\left(-e^{i(a+bx)}\right)}{b^4}+\frac{6id^3\text{Li}_4\left(e^{i(a+bx)}\right)}{b^4}-\frac{6d^2(c+dx)\text{Li}_3\left(-e^{i(a+bx)}\right)}{b^3}+\frac{6d^2(c+dx)\text{Li}_3\left(e^{i(a+bx)}\right)}{b^3}+\frac{3id(c+dx)^2\text{Li}_2\left(-\right.}{b^2}$$

```
[Out] -2*(d*x+c)^3*arctanh(exp(I*(b*x+a)))/b+3*I*d*(d*x+c)^2*polylog(2,-exp(I*(b*
x+a)))/b^2-3*I*d*(d*x+c)^2*polylog(2,exp(I*(b*x+a)))/b^2-6*d^2*(d*x+c)*poly
log(3,-exp(I*(b*x+a)))/b^3+6*d^2*(d*x+c)*polylog(3,exp(I*(b*x+a)))/b^3-6*I*
d^3*polylog(4,-exp(I*(b*x+a)))/b^4+6*I*d^3*polylog(4,exp(I*(b*x+a)))/b^4
```

Rubi [A] time = 0.14, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4183, 2531, 6609, 2282, 6589}

$$-\frac{6d^2(c+dx)\text{PolyLog}\left(3,-e^{i(a+bx)}\right)}{b^3}+\frac{6d^2(c+dx)\text{PolyLog}\left(3,e^{i(a+bx)}\right)}{b^3}+\frac{3id(c+dx)^2\text{PolyLog}\left(2,-e^{i(a+bx)}\right)}{b^2}-\frac{3id(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*Csc[a + b*x],x]
```

```
[Out] (-2*(c + d*x)^3*ArcTanh[E^(I*(a + b*x))])/b + ((3*I)*d*(c + d*x)^2*PolyLog[
2, -E^(I*(a + b*x))])/b^2 - ((3*I)*d*(c + d*x)^2*PolyLog[2, E^(I*(a + b*x))
])/b^2 - (6*d^2*(c + d*x)*PolyLog[3, -E^(I*(a + b*x))])/b^3 + (6*d^2*(c + d
*x)*PolyLog[3, E^(I*(a + b*x))])/b^3 - ((6*I)*d^3*PolyLog[4, -E^(I*(a + b*x
))])/b^4 + ((6*I)*d^3*PolyLog[4, E^(I*(a + b*x))])/b^4
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (c+dx)^3\csc(a+bx)\,dx = -\frac{2(c+dx)^3\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{(3d)\int (c+dx)^2\log\left(1-e^{i(a+bx)}\right)dx}{b} + \frac{(3d)\int (c+dx}{}$$

$$= -\frac{2(c+dx)^3\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} + \frac{3id(c+dx)^2\mathrm{Li}_2\left(-e^{i(a+bx)}\right)}{b^2} - \frac{3id(c+dx)^2\mathrm{Li}_2\left(e^{i(a+bx}\right.}{b^2}$$

$$= -\frac{2(c+dx)^3\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} + \frac{3id(c+dx)^2\mathrm{Li}_2\left(-e^{i(a+bx)}\right)}{b^2} - \frac{3id(c+dx)^2\mathrm{Li}_2\left(e^{i(a+bx}\right.}{b^2}$$

$$= -\frac{2(c+dx)^3\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} + \frac{3id(c+dx)^2\mathrm{Li}_2\left(-e^{i(a+bx)}\right)}{b^2} - \frac{3id(c+dx)^2\mathrm{Li}_2\left(e^{i(a+bx}\right.}{b^2}$$

$$= -\frac{2(c+dx)^3\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} + \frac{3id(c+dx)^2\mathrm{Li}_2\left(-e^{i(a+bx)}\right)}{b^2} - \frac{3id(c+dx)^2\mathrm{Li}_2\left(e^{i(a+bx}\right.}{b^2}$$

Mathematica [A] time = 0.53, size = 221, normalized size = 1.19

$$\frac{-2b^3(c+dx)^3\tanh^{-1}(\cos(a+bx)+i\sin(a+bx)) + 3id\left(b^2(c+dx)^2\mathrm{Li}_2(-\cos(a+bx)-i\sin(a+bx)) + 2ibd(c+\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*x)^3*Csc[a + b*x],x]
```

```
[Out] (-2*b^3*(c + d*x)^3*ArcTanh[Cos[a + b*x] + I*Sin[a + b*x]] + (3*I)*d*(b^2*(
c + d*x)^2*PolyLog[2, -Cos[a + b*x] - I*Sin[a + b*x]] + (2*I)*b*d*(c + d*x)
*PolyLog[3, -Cos[a + b*x] - I*Sin[a + b*x]] - 2*d^2*PolyLog[4, -Cos[a + b*x
] - I*Sin[a + b*x]]) - (3*I)*d*(b^2*(c + d*x)^2*PolyLog[2, Cos[a + b*x] + I
*Sin[a + b*x]] + (2*I)*b*d*(c + d*x)*PolyLog[3, Cos[a + b*x] + I*Sin[a + b*
x]] - 2*d^2*PolyLog[4, Cos[a + b*x] + I*Sin[a + b*x]]))/b^4
```

fricas [C] time = 0.73, size = 816, normalized size = 4.41

$$\frac{6i\,d^3\operatorname{polylog}(4,\cos(bx+a)+i\,\sin(bx+a)) - 6i\,d^3\operatorname{polylog}(4,\cos(bx+a)-i\,\sin(bx+a)) + 6i\,d^3\operatorname{polylog}(4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(6*I*d^3*polylog(4, cos(b*x + a) + I*sin(b*x + a)) - 6*I*d^3*polylog(4,
 cos(b*x + a) - I*sin(b*x + a)) + 6*I*d^3*polylog(4, -cos(b*x + a) + I*sin(
b*x + a)) - 6*I*d^3*polylog(4, -cos(b*x + a) - I*sin(b*x + a)) + (-3*I*b^2*
d^3*x^2 - 6*I*b^2*c*d^2*x - 3*I*b^2*c^2*d)*dilog(cos(b*x + a) + I*sin(b*x +
 a)) + (3*I*b^2*d^3*x^2 + 6*I*b^2*c*d^2*x + 3*I*b^2*c^2*d)*dilog(cos(b*x +
a) - I*sin(b*x + a)) + (-3*I*b^2*d^3*x^2 - 6*I*b^2*c*d^2*x - 3*I*b^2*c^2*d)
*dilog(-cos(b*x + a) + I*sin(b*x + a)) + (3*I*b^2*d^3*x^2 + 6*I*b^2*c*d^2*x
 + 3*I*b^2*c^2*d)*dilog(-cos(b*x + a) - I*sin(b*x + a)) - (b^3*d^3*x^3 + 3*
b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*log(cos(b*x + a) + I*sin(b*x + a)
+ 1) - (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*log(cos(b*
x + a) - I*sin(b*x + a) + 1) + (b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a
^3*d^3)*log(-1/2*cos(b*x + a) + 1/2*I*sin(b*x + a) + 1/2) + (b^3*c^3 - 3*a*
b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*log(-1/2*cos(b*x + a) - 1/2*I*sin(b*x
+ a) + 1/2) + (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + 3*a*b^2*c^2*
d - 3*a^2*b*c*d^2 + a^3*d^3)*log(-cos(b*x + a) + I*sin(b*x + a) + 1) + (b^3
*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2
+ a^3*d^3)*log(-cos(b*x + a) - I*sin(b*x + a) + 1) + 6*(b*d^3*x + b*c*d^2)*
polylog(3, cos(b*x + a) + I*sin(b*x + a)) + 6*(b*d^3*x + b*c*d^2)*polylog(3
, cos(b*x + a) - I*sin(b*x + a)) - 6*(b*d^3*x + b*c*d^2)*polylog(3, -cos(b*
x + a) + I*sin(b*x + a)) - 6*(b*d^3*x + b*c*d^2)*polylog(3, -cos(b*x + a) -
 I*sin(b*x + a)))/b^4
```

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

$$\int (dx+c)^3 \csc(bx+a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^3*csc(b*x + a), x)
```

maple [B] time = 0.12, size = 633, normalized size = 3.42

$$\frac{2d^3a^3 \operatorname{arctanh}\left(e^{i(bx+a)}\right)}{b^4} - \frac{6c\,d^2 \operatorname{polylog}\left(3, -e^{i(bx+a)}\right)}{b^3} + \frac{6c\,d^2 \operatorname{polylog}\left(3, e^{i(bx+a)}\right)}{b^3} - \frac{6d^3 \operatorname{polylog}\left(3, -e^{i(bx+a)}\right) x}{b^3} + \cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*csc(b*x+a),x)
```

```
[Out] 2/b^4*d^3*a^3*arctanh(exp(I*(b*x+a)))-6/b^3*c*d^2*polylog(3,-exp(I*(b*x+a))
)+6/b^3*c*d^2*polylog(3,exp(I*(b*x+a)))-6/b^3*d^3*polylog(3,-exp(I*(b*x+a))
)*x+6/b^3*d^3*polylog(3,exp(I*(b*x+a)))*x-2/b*c^3*arctanh(exp(I*(b*x+a)))-6
*I/b^2*c*d^2*polylog(2,exp(I*(b*x+a)))*x+6*I/b^2*c*d^2*polylog(2,-exp(I*(b*
x+a)))*x-3/b*c^2*d*ln(exp(I*(b*x+a))+1)*x-3/b^2*c^2*d*ln(exp(I*(b*x+a))+1)*
a-3/b*c*d^2*ln(exp(I*(b*x+a))+1)*x^2+3/b*c*d^2*ln(1-exp(I*(b*x+a)))*x^2-1/b
^4*d^3*ln(exp(I*(b*x+a))+1)*a^3+1/b*d^3*ln(1-exp(I*(b*x+a)))*x^3+1/b^4*d^3*
ln(1-exp(I*(b*x+a)))*a^3-1/b*d^3*ln(exp(I*(b*x+a))+1)*x^3+6/b^2*c^2*d*a*arc
tanh(exp(I*(b*x+a)))-6/b^3*c*d^2*a^2*arctanh(exp(I*(b*x+a)))+3*I/b^2*d^3*po
lylog(2,-exp(I*(b*x+a)))*x^2-3*I/b^2*d^3*polylog(2,exp(I*(b*x+a)))*x^2-3*I/
b^2*c^2*d*polylog(2,exp(I*(b*x+a)))+3*I/b^2*c^2*d*polylog(2,-exp(I*(b*x+a))
)-3/b^3*c*d^2*a^2*ln(1-exp(I*(b*x+a)))+3/b^3*c*d^2*a^2*ln(exp(I*(b*x+a))+1)
+3/b*c^2*d*ln(1-exp(I*(b*x+a)))*x+3/b^2*c^2*d*ln(1-exp(I*(b*x+a)))*a-6*I*d^
3*polylog(4,-exp(I*(b*x+a)))/b^4+6*I*d^3*polylog(4,exp(I*(b*x+a)))/b^4
```

maxima [B] time = 0.68, size = 706, normalized size = 3.82

$$-\frac{2\,c^3 \log\left(\cot\left(bx+a\right)+\csc\left(bx+a\right)\right) - \frac{6\,ac^2d \log(\cot(bx+a)+\csc(bx+a))}{b} + \frac{6\,a^2cd^2 \log(\cot(bx+a)+\csc(bx+a))}{b^2} - \frac{2\,a^3d^3 \log(\cot(bx+a)\cdots}{b^3}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*c^3*log(cot(b*x + a) + csc(b*x + a)) - 6*a*c^2*d*log(cot(b*x + a) +
 csc(b*x + a))/b + 6*a^2*c*d^2*log(cot(b*x + a) + csc(b*x + a))/b^2 - 2*a^3
*d^3*log(cot(b*x + a) + csc(b*x + a))/b^3 + (12*I*d^3*polylog(4, -e^(I*b*x
+ I*a)) - 12*I*d^3*polylog(4, e^(I*b*x + I*a)) + (2*I*(b*x + a)^3*d^3 + (6*
I*b*c*d^2 - 6*I*a*d^3)*(b*x + a)^2 + (6*I*b^2*c^2*d - 12*I*a*b*c*d^2 + 6*I*
a^2*d^3)*(b*x + a))*arctan2(sin(b*x + a), cos(b*x + a) + 1) + (2*I*(b*x + a
)^3*d^3 + (6*I*b*c*d^2 - 6*I*a*d^3)*(b*x + a)^2 + (6*I*b^2*c^2*d - 12*I*a*b
```

```
*c*d^2 + 6*I*a^2*d^3)*(b*x + a))*arctan2(sin(b*x + a), -cos(b*x + a) + 1) +
 (-6*I*b^2*c^2*d + 12*I*a*b*c*d^2 - 6*I*(b*x + a)^2*d^3 - 6*I*a^2*d^3 + (-1
2*I*b*c*d^2 + 12*I*a*d^3)*(b*x + a))*dilog(-e^(I*b*x + I*a)) + (6*I*b^2*c^2
*d - 12*I*a*b*c*d^2 + 6*I*(b*x + a)^2*d^3 + 6*I*a^2*d^3 + (12*I*b*c*d^2 - 1
2*I*a*d^3)*(b*x + a))*dilog(e^(I*b*x + I*a)) + ((b*x + a)^3*d^3 + 3*(b*c*d^
2 - a*d^3)*(b*x + a)^2 + 3*(b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*(b*x + a))*l
og(cos(b*x + a)^2 + sin(b*x + a)^2 + 2*cos(b*x + a) + 1) - ((b*x + a)^3*d^3
 + 3*(b*c*d^2 - a*d^3)*(b*x + a)^2 + 3*(b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*
(b*x + a))*log(cos(b*x + a)^2 + sin(b*x + a)^2 - 2*cos(b*x + a) + 1) + 12*(
b*c*d^2 + (b*x + a)*d^3 - a*d^3)*polylog(3, -e^(I*b*x + I*a)) - 12*(b*c*d^2
 + (b*x + a)*d^3 - a*d^3)*polylog(3, e^(I*b*x + I*a)))/b^3)/b
```

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

$$\int \frac{(c+d\,x)^3}{\sin(a+b\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^3/sin(a + b*x),x)
[Out] int((c + d*x)^3/sin(a + b*x), x)
```

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

$$\int (c+dx)^3 \csc(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*csc(b*x+a),x)
[Out] Integral((c + d*x)**3*csc(a + b*x), x)
```

3.24 $\int (c+dx)^2 \csc(a+bx)\,dx$

Optimal. Leaf size=123

$$-\frac{2d^2\text{Li}_3\left(-e^{i(a+bx)}\right)}{b^3}+\frac{2d^2\text{Li}_3\left(e^{i(a+bx)}\right)}{b^3}+\frac{2id(c+dx)\text{Li}_2\left(-e^{i(a+bx)}\right)}{b^2}-\frac{2id(c+dx)\text{Li}_2\left(e^{i(a+bx)}\right)}{b^2}-\frac{2(c+dx)^2\tanh^{-1}\left(e^{i(}\right.}{b}$$

```
[Out] -2*(d*x+c)^2*arctanh(exp(I*(b*x+a)))/b+2*I*d*(d*x+c)*polylog(2,-exp(I*(b*x+
a)))/b^2-2*I*d*(d*x+c)*polylog(2,exp(I*(b*x+a)))/b^2-2*d^2*polylog(3,-exp(I
*(b*x+a)))/b^3+2*d^2*polylog(3,exp(I*(b*x+a)))/b^3
```

Rubi [A] time = 0.09, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4183, 2531, 2282, 6589}

$$\frac{2id(c+dx)\text{PolyLog}\left(2,-e^{i(a+bx)}\right)}{b^2}-\frac{2id(c+dx)\text{PolyLog}\left(2,e^{i(a+bx)}\right)}{b^2}-\frac{2d^2\text{PolyLog}\left(3,-e^{i(a+bx)}\right)}{b^3}+\frac{2d^2\text{PolyLog}\left(3,\right.}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*Csc[a + b*x],x]
```

```
[Out] (-2*(c + d*x)^2*ArcTanh[E^(I*(a + b*x))])/b + ((2*I)*d*(c + d*x)*PolyLog[2,
 -E^(I*(a + b*x))])/b^2 - ((2*I)*d*(c + d*x)*PolyLog[2, E^(I*(a + b*x))])/b
^2 - (2*d^2*PolyLog[3, -E^(I*(a + b*x))])/b^3 + (2*d^2*PolyLog[3, E^(I*(a +
 b*x))])/b^3
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int (c+dx)^2\csc(a+bx)\,dx = -\frac{2(c+dx)^2\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{(2d)\int (c+dx)\log\left(1-e^{i(a+bx)}\right)dx}{b} + \frac{(2d)\int (c+dx}{}$$

$$= -\frac{2(c+dx)^2\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} + \frac{2id(c+dx)\text{Li}_2\left(-e^{i(a+bx)}\right)}{b^2} - \frac{2id(c+dx)\text{Li}_2\left(e^{i(a+bx)}\right.}{b^2}$$

$$= -\frac{2(c+dx)^2\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} + \frac{2id(c+dx)\text{Li}_2\left(-e^{i(a+bx)}\right)}{b^2} - \frac{2id(c+dx)\text{Li}_2\left(e^{i(a+bx)}\right.}{b^2}$$

$$= -\frac{2(c+dx)^2\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} + \frac{2id(c+dx)\text{Li}_2\left(-e^{i(a+bx)}\right)}{b^2} - \frac{2id(c+dx)\text{Li}_2\left(e^{i(a+bx)}\right.}{b^2}$$

Mathematica [A] time = 0.32, size = 148, normalized size = 1.20

$$\frac{\frac{2id\left(b(c+dx)\text{Li}_2\left(-e^{i(a+bx)}\right)+id\text{Li}_3\left(-e^{i(a+bx)}\right)\right)}{b^2} + \frac{2d\left(d\text{Li}_3\left(e^{i(a+bx)}\right)-ib(c+dx)\text{Li}_2\left(e^{i(a+bx)}\right)\right)}{b^2} + (c+dx)^2\log\left(1-e^{i(a+bx)}\right) - (c+dx)^2\log}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*Csc[a + b*x],x]
```

```
[Out] ((c + d*x)^2*Log[1 - E^(I*(a + b*x))] - (c + d*x)^2*Log[1 + E^(I*(a + b*x))
] + ((2*I)*d*(b*(c + d*x)*PolyLog[2, -E^(I*(a + b*x))] + I*d*PolyLog[3, -E^
(I*(a + b*x))]))/b^2 + (2*d*((-I)*b*(c + d*x)*PolyLog[2, E^(I*(a + b*x))] +
 d*PolyLog[3, E^(I*(a + b*x))]))/b^2)/b
```

fricas [C] time = 0.78, size = 500, normalized size = 4.07

$$2\,d^2\text{polylog}\left(3,\cos\left(bx+a\right)+i\,\sin\left(bx+a\right)\right) + 2\,d^2\text{polylog}\left(3,\cos\left(bx+a\right)-i\,\sin\left(bx+a\right)\right) - 2\,d^2\text{polylog}\left(3,-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)^2*csc(b*x+a),x, algorithm="fricas")

[Out] 1/2*(2*d^2*polylog(3, cos(b*x + a) + I*sin(b*x + a)) + 2*d^2*polylog(3, cos(b*x + a) - I*sin(b*x + a)) - 2*d^2*polylog(3, -cos(b*x + a) + I*sin(b*x + a)) - 2*d^2*polylog(3, -cos(b*x + a) - I*sin(b*x + a)) + (-2*I*b*d^2*x - 2*I*b*c*d)*dilog(cos(b*x + a) + I*sin(b*x + a)) + (2*I*b*d^2*x + 2*I*b*c*d)*dilog(cos(b*x + a) - I*sin(b*x + a)) + (-2*I*b*d^2*x - 2*I*b*c*d)*dilog(-cos(b*x + a) + I*sin(b*x + a)) + (2*I*b*d^2*x + 2*I*b*c*d)*dilog(-cos(b*x + a) - I*sin(b*x + a)) - (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(cos(b*x + a) + I*sin(b*x + a) + 1) - (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(cos(b*x + a) - I*sin(b*x + a) + 1) + (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*log(-1/2*cos(b*x + a) + 1/2*I*sin(b*x + a) + 1/2) + (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*log(-1/2*cos(b*x + a) - 1/2*I*sin(b*x + a) + 1/2) + (b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*log(-cos(b*x + a) + I*sin(b*x + a) + 1) + (b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*log(-cos(b*x + a) - I*sin(b*x + a) + 1))/b^3

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

$$\int (dx+c)^2 \csc(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)^2*csc(b*x+a),x, algorithm="giac")

[Out] integrate((d*x + c)^2*csc(b*x + a), x)

maple [B] time = 0.06, size = 361, normalized size = 2.93

$$-\frac{2c^2\operatorname{arctanh}\left(e^{i(bx+a)}\right)}{b}-\frac{2d^2a^2\operatorname{arctanh}\left(e^{i(bx+a)}\right)}{b^3}+\frac{2d^2\operatorname{polylog}\left(3,e^{i(bx+a)}\right)}{b^3}-\frac{2d^2\operatorname{polylog}\left(3,-e^{i(bx+a)}\right)}{b^3}-\frac{2icd\operatorname{poly}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*x+c)^2*csc(b*x+a),x)

[Out] -2/b*c^2*arctanh(exp(I*(b*x+a)))-2/b^3*d^2*a^2*arctanh(exp(I*(b*x+a)))+2*d^2*polylog(3,exp(I*(b*x+a)))/b^3-2*d^2*polylog(3,-exp(I*(b*x+a)))/b^3+2*I/b^2*d^2*polylog(2,-exp(I*(b*x+a)))*x-2*I/b^2*d^2*polylog(2,exp(I*(b*x+a)))*x+4/b^2*c*d*a*arctanh(exp(I*(b*x+a)))-1/b*d^2*ln(exp(I*(b*x+a))+1)*x^2+1/b^3*d^2*ln(exp(I*(b*x+a))+1)*a^2+2*I/b^2*c*d*polylog(2,-exp(I*(b*x+a)))+1/b*d^2*ln(1-exp(I*(b*x+a)))*x^2-1/b^3*d^2*ln(1-exp(I*(b*x+a)))*a^2-2*I/b^2*c*d*polylog(2,exp(I*(b*x+a)))-2/b*c*d*ln(exp(I*(b*x+a))+1)*x-2/b^2*c*d*ln(exp(I*(

```
b*x+a))+1)*a+2/b*c*d*ln(1-exp(I*(b*x+a)))*x+2/b^2*c*d*ln(1-exp(I*(b*x+a)))*
a
```

maxima [B] time = 0.68, size = 392, normalized size = 3.19

$$-\frac{2\,c^2\log\left(\cot\left(bx+a\right)+\csc\left(bx+a\right)\right)-\frac{4\,acd\log(\cot(bx+a)+\csc(bx+a))}{b}+\frac{2\,a^2d^2\log(\cot(bx+a)+\csc(bx+a))}{b^2}+\frac{4\,d^2\mathrm{Li}_3(-e^{(i\,bx+i\,a)})-4}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*c^2*log(cot(b*x + a) + csc(b*x + a)) - 4*a*c*d*log(cot(b*x + a) + c
sc(b*x + a))/b + 2*a^2*d^2*log(cot(b*x + a) + csc(b*x + a))/b^2 + (4*d^2*po
lylog(3, -e^(I*b*x + I*a)) - 4*d^2*polylog(3, e^(I*b*x + I*a)) + (2*I*(b*x
+ a)^2*d^2 + (4*I*b*c*d - 4*I*a*d^2)*(b*x + a))*arctan2(sin(b*x + a), cos(b
*x + a) + 1) + (2*I*(b*x + a)^2*d^2 + (4*I*b*c*d - 4*I*a*d^2)*(b*x + a))*ar
ctan2(sin(b*x + a), -cos(b*x + a) + 1) + (-4*I*b*c*d - 4*I*(b*x + a)*d^2 +
4*I*a*d^2)*dilog(-e^(I*b*x + I*a)) + (4*I*b*c*d + 4*I*(b*x + a)*d^2 - 4*I*a
*d^2)*dilog(e^(I*b*x + I*a)) + ((b*x + a)^2*d^2 + 2*(b*c*d - a*d^2)*(b*x +
a))*log(cos(b*x + a)^2 + sin(b*x + a)^2 + 2*cos(b*x + a) + 1) - ((b*x + a)^
2*d^2 + 2*(b*c*d - a*d^2)*(b*x + a))*log(cos(b*x + a)^2 + sin(b*x + a)^2 -
2*cos(b*x + a) + 1))/b^2)/b
```

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

$$\int \frac{{\left(c+d\,x\right)}^2}{\sin\left(a+b\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^2/sin(a + b*x),x)
```

```
[Out] int((c + d*x)^2/sin(a + b*x), x)
```

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

$$\int \left(c+dx\right)^2\csc\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*csc(b*x+a),x)
```

```
[Out] Integral((c + d*x)**2*csc(a + b*x), x)
```

3.25 $\int (c + dx) \csc(a + bx)\, dx$

Optimal. Leaf size=67

$$\frac{id\text{Li}_2\left(-e^{i(a+bx)}\right)}{b^2} - \frac{id\text{Li}_2\left(e^{i(a+bx)}\right)}{b^2} - \frac{2(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b}$$

```
[Out] -2*(d*x+c)*arctanh(exp(I*(b*x+a)))/b+I*d*polylog(2,-exp(I*(b*x+a)))/b^2-I*d
*polylog(2,exp(I*(b*x+a)))/b^2
```

Rubi [A] time = 0.04, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4183, 2279, 2391}

$$\frac{id\text{PolyLog}\left(2,-e^{i(a+bx)}\right)}{b^2} - \frac{id\text{PolyLog}\left(2,e^{i(a+bx)}\right)}{b^2} - \frac{2(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*Csc[a + b*x],x]
```

```
[Out] (-2*(c + d*x)*ArcTanh[E^(I*(a + b*x))])/b + (I*d*PolyLog[2, -E^(I*(a + b*x)
)])/b^2 - (I*d*PolyLog[2, E^(I*(a + b*x))])/b^2
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rubi steps

$$\int (c+dx)\csc(a+bx)\,dx = -\frac{2(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{d\int \log\left(1-e^{i(a+bx)}\right)dx}{b} + \frac{d\int \log\left(1+e^{i(a+bx)}\right)dx}{b}$$
$$= -\frac{2(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} + \frac{(id)\,\text{Subst}\left(\int \frac{\log(1-x)}{x}dx, x, e^{i(a+bx)}\right)}{b^2} - \frac{(id)\,\text{Subst}\left(\int \frac{1}{\cdot}\right.}{}$$
$$= -\frac{2(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} + \frac{id\text{Li}_2\left(-e^{i(a+bx)}\right)}{b^2} - \frac{id\text{Li}_2\left(e^{i(a+bx)}\right)}{b^2}$$

Mathematica [A] time = 0.07, size = 134, normalized size = 2.00

$$\frac{d\left(i\left(\text{Li}_2\left(-e^{i(a+bx)}\right)-\text{Li}_2\left(e^{i(a+bx)}\right)\right)+(a+bx)\left(\log\left(1-e^{i(a+bx)}\right)-\log\left(1+e^{i(a+bx)}\right)\right)-a\log\left(\tan\left(\frac{1}{2}(a+bx)\right)\right)\right)}{b^2}+$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*Csc[a + b*x],x]
```

```
[Out] -((c*Log[Cos[a/2 + (b*x)/2]])/b) + (c*Log[Sin[a/2 + (b*x)/2]])/b + (d*((a +
 b*x)*(Log[1 - E^(I*(a + b*x))] - Log[1 + E^(I*(a + b*x))]) - a*Log[Tan[(a
+ b*x)/2]] + I*(PolyLog[2, -E^(I*(a + b*x))] - PolyLog[2, E^(I*(a + b*x))])
))/b^2
```

fricas [B] time = 0.73, size = 252, normalized size = 3.76

$$\frac{-i\,d\text{Li}_2\left(\cos\left(bx+a\right)+i\,\sin\left(bx+a\right)\right)+i\,d\text{Li}_2\left(\cos\left(bx+a\right)-i\,\sin\left(bx+a\right)\right)-i\,d\text{Li}_2\left(-\cos\left(bx+a\right)+i\,\sin\left(bx\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(-I*d*dilog(cos(b*x + a) + I*sin(b*x + a)) + I*d*dilog(cos(b*x + a) - I
*sin(b*x + a)) - I*d*dilog(-cos(b*x + a) + I*sin(b*x + a)) + I*d*dilog(-cos
(b*x + a) - I*sin(b*x + a)) - (b*d*x + b*c)*log(cos(b*x + a) + I*sin(b*x +
a) + 1) - (b*d*x + b*c)*log(cos(b*x + a) - I*sin(b*x + a) + 1) + (b*c - a*d
)*log(-1/2*cos(b*x + a) + 1/2*I*sin(b*x + a) + 1/2) + (b*c - a*d)*log(-1/2*
cos(b*x + a) - 1/2*I*sin(b*x + a) + 1/2) + (b*d*x + a*d)*log(-cos(b*x + a)
+ I*sin(b*x + a) + 1) + (b*d*x + a*d)*log(-cos(b*x + a) - I*sin(b*x + a) +
1))/b^2
```

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

$$\int (dx+c)\csc\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)*csc(b*x+a),x, algorithm="giac")

[Out] integrate((d*x + c)*csc(b*x + a), x)

maple [B] time = 0.01, size = 164, normalized size = 2.45

$$\frac{d\ln\left(1-e^{i(bx+a)}\right)x}{b}-\frac{d\ln\left(e^{i(bx+a)}+1\right)x}{b}-\frac{id\,\mathrm{dilog}\left(1-e^{i(bx+a)}\right)}{b^2}+\frac{d\ln\left(1-e^{i(bx+a)}\right)a}{b^2}-\frac{d\ln\left(e^{i(bx+a)}+1\right)a}{b^2}+\frac{id\,\mathrm{dilo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((d*x+c)*csc(b*x+a),x)

[Out] 1/b*d*ln(1-exp(I*(b*x+a)))*x-1/b*d*ln(exp(I*(b*x+a))+1)*x-I/b^2*d*dilog(1-exp(I*(b*x+a)))+1/b^2*d*ln(1-exp(I*(b*x+a)))*a-1/b^2*d*ln(exp(I*(b*x+a))+1)*a+I/b^2*d*dilog(exp(I*(b*x+a))+1)-1/b^2*d*a*ln(csc(b*x+a)-cot(b*x+a))+1/b*c*ln(csc(b*x+a)-cot(b*x+a))

maxima [B] time = 0.70, size = 174, normalized size = 2.60

$$-\frac{2i\,bdx\arctan\left(\sin\left(bx+a\right),-\cos\left(bx+a\right)+1\right)-2i\,bc\arctan\left(\sin\left(bx+a\right),\cos\left(bx+a\right)-1\right)+\left(2i\,bdx+2i\,bc\right)\mathrm{a}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((d*x+c)*csc(b*x+a),x, algorithm="maxima")

[Out] -1/2*(2*I*b*d*x*arctan2(sin(b*x + a), -cos(b*x + a) + 1) - 2*I*b*c*arctan2(sin(b*x + a), cos(b*x + a) - 1) + (2*I*b*d*x + 2*I*b*c)*arctan2(sin(b*x + a), cos(b*x + a) + 1) - 2*I*d*dilog(-e^(I*b*x + I*a)) + 2*I*d*dilog(e^(I*b*x + I*a)) + (b*d*x + b*c)*log(cos(b*x + a)^2 + sin(b*x + a)^2 + 2*cos(b*x + a) + 1) - (b*d*x + b*c)*log(cos(b*x + a)^2 + sin(b*x + a)^2 - 2*cos(b*x + a) + 1))/b^2

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

$$\int \frac{c+d\,x}{\sin\left(a+b\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((c + d*x)/sin(a + b*x),x)

[Out] int((c + d*x)/sin(a + b*x), x)

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

$$\int (c+dx)\csc(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*csc(b*x+a),x)
```

```
[Out] Integral((c + d*x)*csc(a + b*x), x)
```

3.26 $\int \frac{\csc(a+bx)}{c+dx}\,dx$

Optimal. Leaf size=17

$$\text{Int}\left(\frac{\csc(a+bx)}{c+dx},x\right)$$

```
[Out] Unintegrable(csc(b*x+a)/(d*x+c),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc(a+bx)}{c+dx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[a + b*x]/(c + d*x),x]
```

```
[Out] Defer[Int][Csc[a + b*x]/(c + d*x), x]
```

Rubi steps

$$\int \frac{\csc(a+bx)}{c+dx}\,dx = \int \frac{\csc(a+bx)}{c+dx}\,dx$$

Mathematica [A] time = 6.52, size = 0, normalized size = 0.00

$$\int \frac{\csc(a+bx)}{c+dx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[a + b*x]/(c + d*x),x]
```

```
[Out] Integrate[Csc[a + b*x]/(c + d*x), x]
```

fricas [A] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\csc(bx+a)}{dx+c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c),x, algorithm="fricas")
```

```
[Out] integral(csc(b*x + a)/(d*x + c), x)
```

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

$$\int \frac{\csc(bx+a)}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c),x, algorithm="giac")
[Out] integrate(csc(b*x + a)/(d*x + c), x)
```

maple [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{\csc(bx+a)}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)/(d*x+c),x)
[Out] int(csc(b*x+a)/(d*x+c),x)
```

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

$$\int \frac{\csc(bx+a)}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c),x, algorithm="maxima")
[Out] integrate(csc(b*x + a)/(d*x + c), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{1}{\sin(a+b\,x)\,(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)*(c + d*x)),x)
[Out] int(1/(sin(a + b*x)*(c + d*x)), x)
```

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

$$\int \frac{\csc(a+bx)}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c),x)
[Out] Integral(csc(a + b*x)/(c + d*x), x)
```

3.27 $\int \frac{\csc(a+bx)}{(c+dx)^2} dx$

Optimal. Leaf size=17

$$\operatorname{Int}\left(\frac{\csc(a+bx)}{(c+dx)^2},x\right)$$

```
[Out] Unintegrable(csc(b*x+a)/(d*x+c)^2,x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc(a+bx)}{(c+dx)^2} dx$$

Verification is Not applicable to the result.

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

```
[Out] Defer[Int][Csc[a + b*x]/(c + d*x)^2, x]
```

Rubi steps

$$\int \frac{\csc(a+bx)}{(c+dx)^2} dx = \int \frac{\csc(a+bx)}{(c+dx)^2} dx$$

Mathematica [A] time = 7.35, size = 0, normalized size = 0.00

$$\int \frac{\csc(a+bx)}{(c+dx)^2} dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[Csc[a + b*x]/(c + d*x)^2, x]
```

fricas [A] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\csc(bx+a)}{d^2x^2+2\,cdx+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] integral(csc(b*x + a)/(d^2*x^2 + 2*c*d*x + c^2), x)
```

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

$$\int \frac{\csc(bx+a)}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c)^2,x, algorithm="giac")
[Out] integrate(csc(b*x + a)/(d*x + c)^2, x)
```

maple [A] time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{\csc(bx+a)}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)/(d*x+c)^2,x)
[Out] int(csc(b*x+a)/(d*x+c)^2,x)
```

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

$$\int \frac{\csc(bx+a)}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c)^2,x, algorithm="maxima")
[Out] integrate(csc(b*x + a)/(d*x + c)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{1}{\sin(a+b\,x)\,(c+d\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)*(c + d*x)^2),x)
[Out] int(1/(sin(a + b*x)*(c + d*x)^2), x)
```

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

$$\int \frac{\csc(a+bx)}{(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c)**2,x)
```

```
[Out] Integral(csc(a + b*x)/(c + d*x)**2, x)
```

3.28 $\int (c+dx)^3 \csc^2(a+bx)\,dx$

Optimal. Leaf size=113

$$\frac{3d^3\text{Li}_3\left(e^{2i(a+bx)}\right)}{2b^4}-\frac{3id^2(c+dx)\text{Li}_2\left(e^{2i(a+bx)}\right)}{b^3}+\frac{3d(c+dx)^2\log\left(1-e^{2i(a+bx)}\right)}{b^2}-\frac{(c+dx)^3\cot(a+bx)}{b}-\frac{i(c+dx)^3}{b}$$

```
[Out] -I*(d*x+c)^3/b-(d*x+c)^3*cot(b*x+a)/b+3*d*(d*x+c)^2*ln(1-exp(2*I*(b*x+a)))/
b^2-3*I*d^2*(d*x+c)*polylog(2,exp(2*I*(b*x+a)))/b^3+3/2*d^3*polylog(3,exp(2
*I*(b*x+a)))/b^4
```

Rubi [A] time = 0.21, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4184, 3717, 2190, 2531, 2282, 6589}

$$-\frac{3id^2(c+dx)\text{PolyLog}\left(2,e^{2i(a+bx)}\right)}{b^3}+\frac{3d^3\text{PolyLog}\left(3,e^{2i(a+bx)}\right)}{2b^4}+\frac{3d(c+dx)^2\log\left(1-e^{2i(a+bx)}\right)}{b^2}-\frac{(c+dx)^3\cot(a+}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*Csc[a + b*x]^2,x]
```

```
[Out] ((-I)*(c + d*x)^3)/b - ((c + d*x)^3*Cot[a + b*x])/b + (3*d*(c + d*x)^2*Log[
1 - E^((2*I)*(a + b*x))])/b^2 - ((3*I)*d^2*(c + d*x)*PolyLog[2, E^((2*I)*(a
 + b*x))])/b^3 + (3*d^3*PolyLog[3, E^((2*I)*(a + b*x))])/(2*b^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int (c+dx)^3 \csc^2(a+bx)\,dx = -\frac{(c+dx)^3\cot(a+bx)}{b} + \frac{(3d)\int (c+dx)^2\cot(a+bx)\,dx}{b}$$

$$= -\frac{i(c+dx)^3}{b} - \frac{(c+dx)^3\cot(a+bx)}{b} - \frac{(6id)\int \frac{e^{2i(a+bx)}(c+dx)^2}{1-e^{2i(a+bx)}}\,dx}{b}$$

$$= -\frac{i(c+dx)^3}{b} - \frac{(c+dx)^3\cot(a+bx)}{b} + \frac{3d(c+dx)^2\log\left(1-e^{2i(a+bx)}\right)}{b^2} - \frac{\left(6d^2\right)\int (c

Mathematica [B] time = 6.96, size = 478, normalized size = 4.23

$$\frac{3c^2d\csc(a)(\sin(a)\log(\sin(a)\cos(bx)+\cos(a)\sin(bx))-bx\cos(a))}{b^2\left(\sin^2(a)+\cos^2(a)\right)}-\frac{3cd^2\csc(a)\sec(a)\left(b^2x^2e^{i\tan^{-1}(\tan(a))}+\frac{\tan(a)}{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*x)^3*Csc[a + b*x]^2,x]
```

```
[Out] -1/2*(d^3*E^(I*a)*Csc[a]*((2*b^3*x^3)/E^((2*I)*a) + (3*I)*b^2*(1 - E^((-2*I
)*a))*x^2*Log[1 - E^((-I)*(a + b*x))] + (3*I)*b^2*(1 - E^((-2*I)*a))*x^2*Lo
g[1 + E^((-I)*(a + b*x))] - (6*(-1 + E^((2*I)*a))*(b*x*PolyLog[2, -E^((-I)*
(a + b*x))] - I*PolyLog[3, -E^((-I)*(a + b*x))]))/E^((2*I)*a) - (6*(-1 + E^
((2*I)*a))*(b*x*PolyLog[2, E^((-I)*(a + b*x))] - I*PolyLog[3, E^((-I)*(a +
b*x))]))/E^((2*I)*a)))/b^4 + (3*c^2*d*Csc[a]*(-(b*x*Cos[a]) + Log[Cos[b*x]*
Sin[a] + Cos[a]*Sin[b*x]]*Sin[a]))/(b^2*(Cos[a]^2 + Sin[a]^2)) + (Csc[a]*Cs
c[a + b*x]*(c^3*Sin[b*x] + 3*c^2*d*x*Sin[b*x] + 3*c*d^2*x^2*Sin[b*x] + d^3*
x^3*Sin[b*x]))/b - (3*c*d^2*Csc[a]*Sec[a]*(b^2*E^(I*ArcTan[Tan[a]])*x^2 + (
(I*b*x*(-Pi + 2*ArcTan[Tan[a]]) - Pi*Log[1 + E^((-2*I)*b*x)] - 2*(b*x + Arc
Tan[Tan[a]])*Log[1 - E^((2*I)*(b*x + ArcTan[Tan[a]]))] + Pi*Log[Cos[b*x]] +
 2*ArcTan[Tan[a]]*Log[Sin[b*x + ArcTan[Tan[a]]]] + I*PolyLog[2, E^((2*I)*(b
*x + ArcTan[Tan[a]]))])*Tan[a])/Sqrt[1 + Tan[a]^2]))/(b^3*Sqrt[Sec[a]^2*(Co
s[a]^2 + Sin[a]^2)])
```

fricas [C] time = 0.90, size = 672, normalized size = 5.95

$$\frac{6\,d^3\text{polylog}\left(3,\cos\left(bx+a\right)+i\,\sin\left(bx+a\right)\right)\sin\left(bx+a\right)+6\,d^3\text{polylog}\left(3,\cos\left(bx+a\right)-i\,\sin\left(bx+a\right)\right)\sin\left(bx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*csc(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(6*d^3*polylog(3, cos(b*x + a) + I*sin(b*x + a))*sin(b*x + a) + 6*d^3*p
olylog(3, cos(b*x + a) - I*sin(b*x + a))*sin(b*x + a) + 6*d^3*polylog(3, -c
os(b*x + a) + I*sin(b*x + a))*sin(b*x + a) + 6*d^3*polylog(3, -cos(b*x + a)
 - I*sin(b*x + a))*sin(b*x + a) + (-6*I*b*d^3*x - 6*I*b*c*d^2)*dilog(cos(b*
x + a) + I*sin(b*x + a))*sin(b*x + a) + (6*I*b*d^3*x + 6*I*b*c*d^2)*dilog(c
os(b*x + a) - I*sin(b*x + a))*sin(b*x + a) + (6*I*b*d^3*x + 6*I*b*c*d^2)*di
log(-cos(b*x + a) + I*sin(b*x + a))*sin(b*x + a) + (-6*I*b*d^3*x - 6*I*b*c*
d^2)*dilog(-cos(b*x + a) - I*sin(b*x + a))*sin(b*x + a) + 3*(b^2*d^3*x^2 +
2*b^2*c*d^2*x + b^2*c^2*d)*log(cos(b*x + a) + I*sin(b*x + a) + 1)*sin(b*x +
```

```
 a) + 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d)*log(cos(b*x + a) - I*sin(
b*x + a) + 1)*sin(b*x + a) + 3*(b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*log(-1/2
*cos(b*x + a) + 1/2*I*sin(b*x + a) + 1/2)*sin(b*x + a) + 3*(b^2*c^2*d - 2*a
*b*c*d^2 + a^2*d^3)*log(-1/2*cos(b*x + a) - 1/2*I*sin(b*x + a) + 1/2)*sin(b
*x + a) + 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + 2*a*b*c*d^2 - a^2*d^3)*log(-cos(
b*x + a) + I*sin(b*x + a) + 1)*sin(b*x + a) + 3*(b^2*d^3*x^2 + 2*b^2*c*d^2*
x + 2*a*b*c*d^2 - a^2*d^3)*log(-cos(b*x + a) - I*sin(b*x + a) + 1)*sin(b*x
+ a) - 2*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*cos(b*x
+ a))/(b^4*sin(b*x + a))
```

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

$$\int (dx+c)^3 \csc(bx+a)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*csc(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3*csc(b*x + a)^2, x)
```

maple [B] time = 0.11, size = 541, normalized size = 4.79

$$-\frac{6d^3a^2\ln\left(e^{i(bx+a)}\right)}{b^4}+\frac{3d^3a^2\ln\left(e^{i(bx+a)}-1\right)}{b^4}+\frac{3d\,c^2\ln\left(e^{i(bx+a)}+1\right)}{b^2}-\frac{6d\,c^2\ln\left(e^{i(bx+a)}\right)}{b^2}+\frac{3d\,c^2\ln\left(e^{i(bx+a)}-1\right)}{b^2}+\frac{3a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*csc(b*x+a)^2,x)
```

```
[Out] -6/b^4*d^3*a^2*ln(exp(I*(b*x+a)))+3/b^4*d^3*a^2*ln(exp(I*(b*x+a))-1)+3/b^2*
d*c^2*ln(exp(I*(b*x+a))+1)-6/b^2*d*c^2*ln(exp(I*(b*x+a)))+3/b^2*d*c^2*ln(ex
p(I*(b*x+a))-1)+3/b^2*d^3*ln(exp(I*(b*x+a))+1)*x^2+3/b^2*d^3*ln(1-exp(I*(b*
x+a)))*x^2-3/b^4*d^3*ln(1-exp(I*(b*x+a)))*a^2+4*I/b^4*d^3*a^3-2*I/b*d^3*x^3
-2*I*(d^3*x^3+3*c*d^2*x^2+3*c^2*d*x+c^3)/b/(exp(2*I*(b*x+a))-1)+6/b^4*d^3*p
olylog(3,-exp(I*(b*x+a)))+6/b^4*d^3*polylog(3,exp(I*(b*x+a)))+6/b^2*d^2*c*l
n(1-exp(I*(b*x+a)))*x+6/b^3*d^2*c*ln(1-exp(I*(b*x+a)))*a+12/b^3*d^2*c*a*ln(
exp(I*(b*x+a)))-6/b^3*d^2*c*a*ln(exp(I*(b*x+a))-1)+6/b^2*d^2*c*ln(exp(I*(b*
x+a))+1)*x+6*I/b^3*d^3*a^2*x-6*I/b*d^2*c*x^2-6*I/b^3*d^2*c*a^2-6*I/b^3*d^3*
polylog(2,exp(I*(b*x+a)))*x-6*I/b^3*d^3*polylog(2,-exp(I*(b*x+a)))*x-6*I/b^
3*d^2*c*polylog(2,-exp(I*(b*x+a)))-6*I/b^3*d^2*c*polylog(2,exp(I*(b*x+a)))-
12*I/b^2*d^2*c*a*x
```

maxima [B] time = 0.72, size = 1650, normalized size = 14.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*csc(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(3*((cos(2*b*x + 2*a)^2 + sin(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*
log(cos(b*x + a)^2 + sin(b*x + a)^2 + 2*cos(b*x + a) + 1) + (cos(2*b*x + 2*
a)^2 + sin(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*log(cos(b*x + a)^2 + si
n(b*x + a)^2 - 2*cos(b*x + a) + 1) - 4*(b*x + a)*sin(2*b*x + 2*a))*c^2*d/((
cos(2*b*x + 2*a)^2 + sin(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*b) - 6*((
cos(2*b*x + 2*a)^2 + sin(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*log(cos(b
*x + a)^2 + sin(b*x + a)^2 + 2*cos(b*x + a) + 1) + (cos(2*b*x + 2*a)^2 + si
n(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*log(cos(b*x + a)^2 + sin(b*x + a
)^2 - 2*cos(b*x + a) + 1) - 4*(b*x + a)*sin(2*b*x + 2*a))*a*c*d^2/((cos(2*b
*x + 2*a)^2 + sin(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*b^2) + 3*((cos(2
*b*x + 2*a)^2 + sin(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*log(cos(b*x +
a)^2 + sin(b*x + a)^2 + 2*cos(b*x + a) + 1) + (cos(2*b*x + 2*a)^2 + sin(2*b
*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*log(cos(b*x + a)^2 + sin(b*x + a)^2 -
 2*cos(b*x + a) + 1) - 4*(b*x + a)*sin(2*b*x + 2*a))*a^2*d^3/((cos(2*b*x +
2*a)^2 + sin(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*b^3) - 2*c^3/tan(b*x
+ a) + 6*a*c^2*d/(b*tan(b*x + a)) - 6*a^2*c*d^2/(b^2*tan(b*x + a)) + 2*a^3*
d^3/(b^3*tan(b*x + a)) - 2*((6*(b*x + a)^2*d^3 + 12*(b*c*d^2 - a*d^3)*(b*x
+ a) - 6*((b*x + a)^2*d^3 + 2*(b*c*d^2 - a*d^3)*(b*x + a))*cos(2*b*x + 2*a)
 - (6*I*(b*x + a)^2*d^3 + (12*I*b*c*d^2 - 12*I*a*d^3)*(b*x + a))*sin(2*b*x
+ 2*a))*arctan2(sin(b*x + a), cos(b*x + a) + 1) - (6*(b*x + a)^2*d^3 + 12*(
b*c*d^2 - a*d^3)*(b*x + a) - 6*((b*x + a)^2*d^3 + 2*(b*c*d^2 - a*d^3)*(b*x
+ a))*cos(2*b*x + 2*a) + (-6*I*(b*x + a)^2*d^3 + (-12*I*b*c*d^2 + 12*I*a*d^
3)*(b*x + a))*sin(2*b*x + 2*a))*arctan2(sin(b*x + a), -cos(b*x + a) + 1) +
4*((b*x + a)^3*d^3 + 3*(b*c*d^2 - a*d^3)*(b*x + a)^2)*cos(2*b*x + 2*a) - (1
2*b*c*d^2 + 12*(b*x + a)*d^3 - 12*a*d^3 - 12*(b*c*d^2 + (b*x + a)*d^3 - a*d
^3)*cos(2*b*x + 2*a) + (-12*I*b*c*d^2 - 12*I*(b*x + a)*d^3 + 12*I*a*d^3)*si
n(2*b*x + 2*a))*dilog(-e^(I*b*x + I*a)) - (12*b*c*d^2 + 12*(b*x + a)*d^3 -
12*a*d^3 - 12*(b*c*d^2 + (b*x + a)*d^3 - a*d^3)*cos(2*b*x + 2*a) + (-12*I*b
*c*d^2 - 12*I*(b*x + a)*d^3 + 12*I*a*d^3)*sin(2*b*x + 2*a))*dilog(e^(I*b*x
+ I*a)) - (3*I*(b*x + a)^2*d^3 + (6*I*b*c*d^2 - 6*I*a*d^3)*(b*x + a) + (-3*
I*(b*x + a)^2*d^3 + (-6*I*b*c*d^2 + 6*I*a*d^3)*(b*x + a))*cos(2*b*x + 2*a)
+ 3*((b*x + a)^2*d^3 + 2*(b*c*d^2 - a*d^3)*(b*x + a))*sin(2*b*x + 2*a))*log
(cos(b*x + a)^2 + sin(b*x + a)^2 + 2*cos(b*x + a) + 1) - (3*I*(b*x + a)^2*d
^3 + (6*I*b*c*d^2 - 6*I*a*d^3)*(b*x + a) + (-3*I*(b*x + a)^2*d^3 + (-6*I*b*
c*d^2 + 6*I*a*d^3)*(b*x + a))*cos(2*b*x + 2*a) + 3*((b*x + a)^2*d^3 + 2*(b*
c*d^2 - a*d^3)*(b*x + a))*sin(2*b*x + 2*a))*log(cos(b*x + a)^2 + sin(b*x +
a)^2 - 2*cos(b*x + a) + 1) - (-12*I*d^3*cos(2*b*x + 2*a) + 12*d^3*sin(2*b*x
 + 2*a) + 12*I*d^3)*polylog(3, -e^(I*b*x + I*a)) - (-12*I*d^3*cos(2*b*x + 2
*a) + 12*d^3*sin(2*b*x + 2*a) + 12*I*d^3)*polylog(3, e^(I*b*x + I*a)) - (-4
*I*(b*x + a)^3*d^3 + (-12*I*b*c*d^2 + 12*I*a*d^3)*(b*x + a)^2)*sin(2*b*x +
2*a))/(-2*I*b^3*cos(2*b*x + 2*a) + 2*b^3*sin(2*b*x + 2*a) + 2*I*b^3))/b
```

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

$$\int \frac{(c + d\,x)^3}{\sin(a + b\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^3/sin(a + b*x)^2,x)
```

```
[Out] int((c + d*x)^3/sin(a + b*x)^2, x)
```

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

$$\int (c + dx)^3 \csc^2(a + bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*csc(b*x+a)**2,x)
```

```
[Out] Integral((c + d*x)**3*csc(a + b*x)**2, x)
```

3.29 $\int (c+dx)^2 \csc^2(a+bx)\,dx$

Optimal. Leaf size=83

$$-\frac{id^2 \text{Li}_2\left(e^{2i(a+bx)}\right)}{b^3}+\frac{2d(c+dx)\log\left(1-e^{2i(a+bx)}\right)}{b^2}-\frac{(c+dx)^2\cot(a+bx)}{b}-\frac{i(c+dx)^2}{b}$$

```
[Out] -I*(d*x+c)^2/b-(d*x+c)^2*cot(b*x+a)/b+2*d*(d*x+c)*ln(1-exp(2*I*(b*x+a)))/b^
2-I*d^2*polylog(2,exp(2*I*(b*x+a)))/b^3
```

Rubi [A] time = 0.14, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {4184, 3717, 2190, 2279, 2391}

$$-\frac{id^2 \text{PolyLog}\left(2,e^{2i(a+bx)}\right)}{b^3}+\frac{2d(c+dx)\log\left(1-e^{2i(a+bx)}\right)}{b^2}-\frac{(c+dx)^2\cot(a+bx)}{b}-\frac{i(c+dx)^2}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*Csc[a + b*x]^2,x]
```

```
[Out] ((-I)*(c + d*x)^2)/b - ((c + d*x)^2*Cot[a + b*x])/b + (2*d*(c + d*x)*Log[1
- E^((2*I)*(a + b*x))])/b^2 - (I*d^2*PolyLog[2, E^((2*I)*(a + b*x))])/b^3
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (c+dx)^2\csc^2(a+bx)\,dx = -\frac{(c+dx)^2\cot(a+bx)}{b}+\frac{(2d)\int (c+dx)\cot(a+bx)\,dx}{b}$$
$$= -\frac{i(c+dx)^2}{b}-\frac{(c+dx)^2\cot(a+bx)}{b}-\frac{(4id)\int \frac{e^{2i(a+bx)}(c+dx)}{1-e^{2i(a+bx)}}\,dx}{b}$$
$$= -\frac{i(c+dx)^2}{b}-\frac{(c+dx)^2\cot(a+bx)}{b}+\frac{2d(c+dx)\log\left(1-e^{2i(a+bx)}\right)}{b^2}-\frac{\left(2d^2\right)\int \log$$
$$= -\frac{i(c+dx)^2}{b}-\frac{(c+dx)^2\cot(a+bx)}{b}+\frac{2d(c+dx)\log\left(1-e^{2i(a+bx)}\right)}{b^2}+\frac{\left(id^2\right)\text{Subst}$$
$$= -\frac{i(c+dx)^2}{b}-\frac{(c+dx)^2\cot(a+bx)}{b}+\frac{2d(c+dx)\log\left(1-e^{2i(a+bx)}\right)}{b^2}-\frac{id^2\text{Li}_2\left(e^{2i(a}}{b^3}$$

Mathematica [B] time = 4.19, size = 181, normalized size = 2.18

$$\csc(a)\left(b^2\sin(bx)(c+dx)^2\csc(a+bx)+d^2\left(-b^2x^2\cos(a)e^{i\tan^{-1}(\tan(a))}\sqrt{\sec^2(a)}-\sin(a)\left(i\text{Li}_2\left(e^{2i\left(bx+\tan^{-1}(\tan(a)\right)}\right.\right.\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(c + d*x)^2*Csc[a + b*x]^2,x]
```

```
[Out] (Csc[a]*(-2*b*c*d*(b*x*Cos[a] - Log[Sin[a + b*x]]*Sin[a]) + d^2*(-(b^2*E^(I
*ArcTan[Tan[a]])*x^2*Cos[a]*Sqrt[Sec[a]^2]) - ((-I)*b*x*(Pi - 2*ArcTan[Tan[
a]]) - Pi*Log[1 + E^((-2*I)*b*x)] - 2*(b*x + ArcTan[Tan[a]])*Log[1 - E^((2*
I)*(b*x + ArcTan[Tan[a]]))] + Pi*Log[Cos[b*x]] + 2*ArcTan[Tan[a]]*Log[Sin[b
*x + ArcTan[Tan[a]]]] + I*PolyLog[2, E^((2*I)*(b*x + ArcTan[Tan[a]]))])*Sin
[a]) + b^2*(c + d*x)^2*Csc[a + b*x]*Sin[b*x]))/b^3
```

fricas [B] time = 0.80, size = 379, normalized size = 4.57

$$-i\,d^2\mathrm{Li}_2\left(\cos\left(bx+a\right)+i\,\sin\left(bx+a\right)\right)\sin\left(bx+a\right)+i\,d^2\mathrm{Li}_2\left(\cos\left(bx+a\right)-i\,\sin\left(bx+a\right)\right)\sin\left(bx+a\right)+i\,d^2\mathrm{Li}_2\,($$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (-I*d^2*dilog(cos(b*x + a) + I*sin(b*x + a))*sin(b*x + a) + I*d^2*dilog(cos
(b*x + a) - I*sin(b*x + a))*sin(b*x + a) + I*d^2*dilog(-cos(b*x + a) + I*si
n(b*x + a))*sin(b*x + a) - I*d^2*dilog(-cos(b*x + a) - I*sin(b*x + a))*sin(
b*x + a) + (b*d^2*x + b*c*d)*log(cos(b*x + a) + I*sin(b*x + a) + 1)*sin(b*x
 + a) + (b*d^2*x + b*c*d)*log(cos(b*x + a) - I*sin(b*x + a) + 1)*sin(b*x +
a) + (b*c*d - a*d^2)*log(-1/2*cos(b*x + a) + 1/2*I*sin(b*x + a) + 1/2)*sin(
b*x + a) + (b*c*d - a*d^2)*log(-1/2*cos(b*x + a) - 1/2*I*sin(b*x + a) + 1/2
)*sin(b*x + a) + (b*d^2*x + a*d^2)*log(-cos(b*x + a) + I*sin(b*x + a) + 1)*
sin(b*x + a) + (b*d^2*x + a*d^2)*log(-cos(b*x + a) - I*sin(b*x + a) + 1)*si
n(b*x + a) - (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(b*x + a))/(b^3*sin(b
*x + a))
```

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

$$\int \left(dx+c\right)^2 \csc\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^2*csc(b*x + a)^2, x)
```

maple [B] time = 0.07, size = 276, normalized size = 3.33

$$-\frac{2i\left(d^2x^2+2cdx+c^2\right)}{b\left(\mathrm{e}^{2i(bx+a)}-1\right)}+\frac{2dc\ln\left(\mathrm{e}^{i(bx+a)}+1\right)}{b^2}-\frac{4dc\ln\left(\mathrm{e}^{i(bx+a)}\right)}{b^2}+\frac{2dc\ln\left(\mathrm{e}^{i(bx+a)}-1\right)}{b^2}-\frac{2id^2x^2}{b}-\frac{4id^2ax}{b^2}-\frac{2id^2a^2}{b^3}+\frac{2d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*csc(b*x+a)^2,x)
```

```
[Out] -2*I*(d^2*x^2+2*c*d*x+c^2)/b/(exp(2*I*(b*x+a))-1)+2/b^2*d*c*ln(exp(I*(b*x+a
))+1)-4/b^2*d*c*ln(exp(I*(b*x+a)))+2/b^2*d*c*ln(exp(I*(b*x+a))-1)-2*I/b*d^2
*x^2-4*I/b^2*d^2*a*x-2*I/b^3*d^2*a^2+2/b^2*d^2*ln(exp(I*(b*x+a))+1)*x-2*I/b
^3*d^2*polylog(2,-exp(I*(b*x+a)))+2/b^2*d^2*ln(1-exp(I*(b*x+a)))*x+2/b^3*d^
```

```
2*ln(1-exp(I*(b*x+a)))*a-2*I/b^3*d^2*polylog(2,exp(I*(b*x+a)))+4/b^3*d^2*a*
ln(exp(I*(b*x+a)))-2/b^3*d^2*a*ln(exp(I*(b*x+a))-1)
```

maxima [B] time = 0.51, size = 555, normalized size = 6.69

$$-\frac{2\,b^2c^2+\left(2\,bd^2x+2\,bcd-2\left(bd^2x+bcd\right)\cos\left(2\,bx+2\,a\right)-\left(2i\,bd^2x+2i\,bcd\right)\sin\left(2\,bx+2\,a\right)\right)\arctan\left(\sin\left(bx\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(2*b^2*c^2 + (2*b*d^2*x + 2*b*c*d - 2*(b*d^2*x + b*c*d)*cos(2*b*x + 2*a) -
 (2*I*b*d^2*x + 2*I*b*c*d)*sin(2*b*x + 2*a))*arctan2(sin(b*x + a), cos(b*x
+ a) + 1) - (2*b*c*d*cos(2*b*x + 2*a) + 2*I*b*c*d*sin(2*b*x + 2*a) - 2*b*c*
d)*arctan2(sin(b*x + a), cos(b*x + a) - 1) + (2*b*d^2*x*cos(2*b*x + 2*a) +
2*I*b*d^2*x*sin(2*b*x + 2*a) - 2*b*d^2*x)*arctan2(sin(b*x + a), -cos(b*x +
a) + 1) + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x)*cos(2*b*x + 2*a) + (2*d^2*cos(2*b*x
 + 2*a) + 2*I*d^2*sin(2*b*x + 2*a) - 2*d^2)*dilog(-e^(I*b*x + I*a)) + (2*d^
2*cos(2*b*x + 2*a) + 2*I*d^2*sin(2*b*x + 2*a) - 2*d^2)*dilog(e^(I*b*x + I*a
)) - (I*b*d^2*x + I*b*c*d + (-I*b*d^2*x - I*b*c*d)*cos(2*b*x + 2*a) + (b*d^
2*x + b*c*d)*sin(2*b*x + 2*a))*log(cos(b*x + a)^2 + sin(b*x + a)^2 + 2*cos(
b*x + a) + 1) - (I*b*d^2*x + I*b*c*d + (-I*b*d^2*x - I*b*c*d)*cos(2*b*x + 2
*a) + (b*d^2*x + b*c*d)*sin(2*b*x + 2*a))*log(cos(b*x + a)^2 + sin(b*x + a)
^2 - 2*cos(b*x + a) + 1) - (-2*I*b^2*d^2*x^2 - 4*I*b^2*c*d*x)*sin(2*b*x + 2
*a))/(-I*b^3*cos(2*b*x + 2*a) + b^3*sin(2*b*x + 2*a) + I*b^3)
```

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

$$\int \frac{(c+d\,x)^2}{\sin\left(a+b\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^2/sin(a + b*x)^2,x)
```

```
[Out] int((c + d*x)^2/sin(a + b*x)^2, x)
```

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

$$\int (c+dx)^2\csc^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*csc(b*x+a)**2,x)
```

```
[Out] Integral((c + d*x)**2*csc(a + b*x)**2, x)
```

3.30 $\int (c+dx)\csc^2(a+bx)\,dx$

Optimal. Leaf size=29

$$\frac{d\log(\sin(a+bx))}{b^2}-\frac{(c+dx)\cot(a+bx)}{b}$$

```
[Out] -(d*x+c)*cot(b*x+a)/b+d*ln(sin(b*x+a))/b^2
```

Rubi [A] time = 0.03, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4184, 3475}

$$\frac{d\log(\sin(a+bx))}{b^2}-\frac{(c+dx)\cot(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*Csc[a + b*x]^2,x]
```

```
[Out] -(((c + d*x)*Cot[a + b*x])/b) + (d*Log[Sin[a + b*x]])/b^2
```

Rule 3475

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

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int (c+dx)\csc^2(a+bx)\,dx &= -\frac{(c+dx)\cot(a+bx)}{b}+\frac{d\int \cot(a+bx)\,dx}{b}\\ &= -\frac{(c+dx)\cot(a+bx)}{b}+\frac{d\log(\sin(a+bx))}{b^2}\end{aligned}$$

Mathematica [A] time = 0.09, size = 52, normalized size = 1.79

$$\frac{d\log(\sin(a+bx))}{b^2}-\frac{c\cot(a+bx)}{b}-\frac{dx\cot(a)}{b}+\frac{dx\csc(a)\sin(bx)\csc(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*Csc[a + b*x]^2,x]
```

```
[Out] -((d*x*Cot[a])/b) - (c*Cot[a + b*x])/b + (d*Log[Sin[a + b*x]])/b^2 + (d*x*C
sc[a]*Csc[a + b*x]*Sin[b*x])/b
```

fricas [A] time = 0.78, size = 46, normalized size = 1.59

$$\frac{d\log\left(\frac{1}{2}\,\sin\left(bx+a\right)\right)\sin\left(bx+a\right)-\left(bdx+bc\right)\cos\left(bx+a\right)}{b^{2}\sin\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (d*log(1/2*sin(b*x + a))*sin(b*x + a) - (b*d*x + b*c)*cos(b*x + a))/(b^2*si
n(b*x + a))
```

giac [B] time = 3.37, size = 1251, normalized size = 43.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(b*d*x*tan(1/2*b*x)^2*tan(1/2*a)^2 + b*c*tan(1/2*b*x)^2*tan(1/2*a)^2 -
b*d*x*tan(1/2*b*x)^2 - 4*b*d*x*tan(1/2*b*x)*tan(1/2*a) + d*log(16*(tan(1/2*
b*x)^8*tan(1/2*a)^2 + 2*tan(1/2*b*x)^7*tan(1/2*a)^3 + tan(1/2*b*x)^6*tan(1/
2*a)^4 - 2*tan(1/2*b*x)^7*tan(1/2*a) - 2*tan(1/2*b*x)^6*tan(1/2*a)^2 + 2*ta
n(1/2*b*x)^5*tan(1/2*a)^3 + 2*tan(1/2*b*x)^4*tan(1/2*a)^4 + tan(1/2*b*x)^6
- 2*tan(1/2*b*x)^5*tan(1/2*a) - 6*tan(1/2*b*x)^4*tan(1/2*a)^2 - 2*tan(1/2*b
*x)^3*tan(1/2*a)^3 + tan(1/2*b*x)^2*tan(1/2*a)^4 + 2*tan(1/2*b*x)^4 + 2*tan
(1/2*b*x)^3*tan(1/2*a) - 2*tan(1/2*b*x)^2*tan(1/2*a)^2 - 2*tan(1/2*b*x)*tan
(1/2*a)^3 + tan(1/2*b*x)^2 + 2*tan(1/2*b*x)*tan(1/2*a) + tan(1/2*a)^2)/(tan
(1/2*a)^4 + 2*tan(1/2*a)^2 + 1))*tan(1/2*b*x)^2*tan(1/2*a) - b*d*x*tan(1/2*
a)^2 + d*log(16*(tan(1/2*b*x)^8*tan(1/2*a)^2 + 2*tan(1/2*b*x)^7*tan(1/2*a)^
3 + tan(1/2*b*x)^6*tan(1/2*a)^4 - 2*tan(1/2*b*x)^7*tan(1/2*a) - 2*tan(1/2*b
*x)^6*tan(1/2*a)^2 + 2*tan(1/2*b*x)^5*tan(1/2*a)^3 + 2*tan(1/2*b*x)^4*tan(1
/2*a)^4 + tan(1/2*b*x)^6 - 2*tan(1/2*b*x)^5*tan(1/2*a) - 6*tan(1/2*b*x)^4*t
an(1/2*a)^2 - 2*tan(1/2*b*x)^3*tan(1/2*a)^3 + tan(1/2*b*x)^2*tan(1/2*a)^4 +
 2*tan(1/2*b*x)^4 + 2*tan(1/2*b*x)^3*tan(1/2*a) - 2*tan(1/2*b*x)^2*tan(1/2*
a)^2 - 2*tan(1/2*b*x)*tan(1/2*a)^3 + tan(1/2*b*x)^2 + 2*tan(1/2*b*x)*tan(1/
2*a) + tan(1/2*a)^2)/(tan(1/2*a)^4 + 2*tan(1/2*a)^2 + 1))*tan(1/2*b*x)*tan(
1/2*a)^2 - b*c*tan(1/2*b*x)^2 - 4*b*c*tan(1/2*b*x)*tan(1/2*a) - b*c*tan(1/2
```

```
*a)^2 + b*d*x - d*log(16*(tan(1/2*b*x)^8*tan(1/2*a)^2 + 2*tan(1/2*b*x)^7*ta
n(1/2*a)^3 + tan(1/2*b*x)^6*tan(1/2*a)^4 - 2*tan(1/2*b*x)^7*tan(1/2*a) - 2*
tan(1/2*b*x)^6*tan(1/2*a)^2 + 2*tan(1/2*b*x)^5*tan(1/2*a)^3 + 2*tan(1/2*b*x
)^4*tan(1/2*a)^4 + tan(1/2*b*x)^6 - 2*tan(1/2*b*x)^5*tan(1/2*a) - 6*tan(1/2
*b*x)^4*tan(1/2*a)^2 - 2*tan(1/2*b*x)^3*tan(1/2*a)^3 + tan(1/2*b*x)^2*tan(1
/2*a)^4 + 2*tan(1/2*b*x)^4 + 2*tan(1/2*b*x)^3*tan(1/2*a) - 2*tan(1/2*b*x)^2
*tan(1/2*a)^2 - 2*tan(1/2*b*x)*tan(1/2*a)^3 + tan(1/2*b*x)^2 + 2*tan(1/2*b*
x)*tan(1/2*a) + tan(1/2*a)^2)/(tan(1/2*a)^4 + 2*tan(1/2*a)^2 + 1))*tan(1/2*
b*x) - d*log(16*(tan(1/2*b*x)^8*tan(1/2*a)^2 + 2*tan(1/2*b*x)^7*tan(1/2*a)^
3 + tan(1/2*b*x)^6*tan(1/2*a)^4 - 2*tan(1/2*b*x)^7*tan(1/2*a) - 2*tan(1/2*b
*x)^6*tan(1/2*a)^2 + 2*tan(1/2*b*x)^5*tan(1/2*a)^3 + 2*tan(1/2*b*x)^4*tan(1
/2*a)^4 + tan(1/2*b*x)^6 - 2*tan(1/2*b*x)^5*tan(1/2*a) - 6*tan(1/2*b*x)^4*t
an(1/2*a)^2 - 2*tan(1/2*b*x)^3*tan(1/2*a)^3 + tan(1/2*b*x)^2*tan(1/2*a)^4 +
 2*tan(1/2*b*x)^4 + 2*tan(1/2*b*x)^3*tan(1/2*a) - 2*tan(1/2*b*x)^2*tan(1/2*
a)^2 - 2*tan(1/2*b*x)*tan(1/2*a)^3 + tan(1/2*b*x)^2 + 2*tan(1/2*b*x)*tan(1/
2*a) + tan(1/2*a)^2)/(tan(1/2*a)^4 + 2*tan(1/2*a)^2 + 1))*tan(1/2*a) + b*c)
/(b^2*tan(1/2*b*x)^2*tan(1/2*a) + b^2*tan(1/2*b*x)*tan(1/2*a)^2 - b^2*tan(1
/2*b*x) - b^2*tan(1/2*a))
```

maple [A] time = 0.02, size = 39, normalized size = 1.34

$$-\frac{d\cot\left(bx+a\right)x}{b}+\frac{d\ln\left(\sin\left(bx+a\right)\right)}{b^{2}}-\frac{c\cot\left(bx+a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*csc(b*x+a)^2,x)
```

```
[Out] -1/b*d*cot(b*x+a)*x+d*ln(sin(b*x+a))/b^2-1/b*c*cot(b*x+a)
```

maxima [B] time = 0.53, size = 217, normalized size = 7.48

$$\frac{\frac{\left(\left(\cos(2\,bx+2\,a)^2+\sin(2\,bx+2\,a)^2-2\,\cos(2\,bx+2\,a)+1\right)\log\left(\cos(bx+a)^2+\sin(bx+a)^2+2\,\cos(bx+a)+1\right)+\left(\cos(2\,bx+2\,a)^2+\sin(2\,bx+2\,a)^2-2\,\cos(2\,bx+2\,a)\cdots\right.}{\left(\cos(2\,bx+2\,a)^2+\sin(2\,bx+2\,a)^2-2\,\cos(2\,bx+2\,a)+1\right)b}\cdots}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(((cos(2*b*x + 2*a)^2 + sin(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*lo
g(cos(b*x + a)^2 + sin(b*x + a)^2 + 2*cos(b*x + a) + 1) + (cos(2*b*x + 2*a)
^2 + sin(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*log(cos(b*x + a)^2 + sin(
b*x + a)^2 - 2*cos(b*x + a) + 1) - 4*(b*x + a)*sin(2*b*x + 2*a))*d/((cos(2*
b*x + 2*a)^2 + sin(2*b*x + 2*a)^2 - 2*cos(2*b*x + 2*a) + 1)*b) - 2*c/tan(b*
x + a) + 2*a*d/(b*tan(b*x + a)))/b
```

mupad [**B**] time = 1.18, size = 55, normalized size = 1.90

$$\frac{d\ \ln\left(e^{a\,2i}\,e^{b\,x\,2i}-1\right)}{b^2}-\frac{(c+d\,x)\ 2i}{b\,\left(e^{a\,2i+b\,x\,2i}-1\right)}-\frac{d\,x\,2i}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/sin(a + b*x)^2,x)
```

```
[Out] (d*log(exp(a*2i)*exp(b*x*2i) - 1))/b^2 - ((c + d*x)*2i)/(b*(exp(a*2i + b*x*
2i) - 1)) - (d*x*2i)/b
```

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

$$\int (c+dx)\csc^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*csc(b*x+a)**2,x)
```

```
[Out] Integral((c + d*x)*csc(a + b*x)**2, x)
```

3.31 $\int \frac{\csc^2(a+bx)}{c+dx}\,dx$

Optimal. Leaf size=19

$$\operatorname{Int}\left(\frac{\csc^2(a+bx)}{c+dx},x\right)$$

```
[Out] Unintegrable(csc(b*x+a)^2/(d*x+c),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc^2(a+bx)}{c+dx}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Defer[Int][Csc[a + b*x]^2/(c + d*x), x]
```

Rubi steps

$$\int \frac{\csc^2(a+bx)}{c+dx}\,dx = \int \frac{\csc^2(a+bx)}{c+dx}\,dx$$

Mathematica [A] time = 6.66, size = 0, normalized size = 0.00

$$\int \frac{\csc^2(a+bx)}{c+dx}\,dx$$

Verification is Not applicable to the result.

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

```
[Out] Integrate[Csc[a + b*x]^2/(c + d*x), x]
```

fricas [A] time = 0.60, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\csc(bx+a)^2}{dx+c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*x+c),x, algorithm="fricas")
```

```
[Out] integral(csc(b*x + a)^2/(d*x + c), x)
```

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

$$\int \frac{\csc(bx+a)^2}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*x+c),x, algorithm="giac")
```

```
[Out] integrate(csc(b*x + a)^2/(d*x + c), x)
```

maple [A] time = 0.24, size = 0, normalized size = 0.00

$$\int \frac{\csc^2(bx+a)}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^2/(d*x+c),x)
```

```
[Out] int(csc(b*x+a)^2/(d*x+c),x)
```

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

$$\frac{\frac{\left(bd^2x+bcd+\left(bd^2x+bcd\right)\cos(2\,bx+2\,a)^2+\left(bd^2x+bcd\right)\sin(2\,bx+2\,a)^2-2\left(bd^2x+bcd\right)\cos(2\,bx+2\,a)\right)\int\frac{\sin(bx+a)}{(dx+c)^2\left(\cos(bx+a)^2+\sin(bx+a)^2+2\cos(bx+a)+1\right)}\,dx}{b} -}{bdx+(bdx+bc)\cos(2\,bx+2\,a)^2+(bdx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*x+c),x, algorithm="maxima")
```

```
[Out] ((b*d^2*x + b*c*d + (b*d^2*x + b*c*d)*cos(2*b*x + 2*a)^2 + (b*d^2*x + b*c*d
)*sin(2*b*x + 2*a)^2 - 2*(b*d^2*x + b*c*d)*cos(2*b*x + 2*a))*integrate(sin(
b*x + a)/(b*d^2*x^2 + 2*b*c*d*x + b*c^2 + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*c
os(b*x + a)^2 + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*sin(b*x + a)^2 + 2*(b*d^2*x
^2 + 2*b*c*d*x + b*c^2)*cos(b*x + a)), x) - (b*d^2*x + b*c*d + (b*d^2*x + b
*c*d)*cos(2*b*x + 2*a)^2 + (b*d^2*x + b*c*d)*sin(2*b*x + 2*a)^2 - 2*(b*d^2*
x + b*c*d)*cos(2*b*x + 2*a))*integrate(sin(b*x + a)/(b*d^2*x^2 + 2*b*c*d*x
+ b*c^2 + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cos(b*x + a)^2 + (b*d^2*x^2 + 2*b
*c*d*x + b*c^2)*sin(b*x + a)^2 - 2*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*cos(b*x
+ a)), x) - 2*sin(2*b*x + 2*a))/(b*d*x + (b*d*x + b*c)*cos(2*b*x + 2*a)^2 +
 (b*d*x + b*c)*sin(2*b*x + 2*a)^2 + b*c - 2*(b*d*x + b*c)*cos(2*b*x + 2*a))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{\sin(a+b\,x)^2\,(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^2*(c + d*x)),x)
[Out] int(1/(sin(a + b*x)^2*(c + d*x)), x)
```

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

$$\int \frac{\csc^2(a+bx)}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**2/(d*x+c),x)
[Out] Integral(csc(a + b*x)**2/(c + d*x), x)
```

3.32 $\int \frac{\csc^2(a+bx)}{(c+dx)^2}\,dx$

Optimal. Leaf size=19

$$\text{Int}\left(\frac{\csc^2(a+bx)}{(c+dx)^2},x\right)$$

```
[Out] Unintegrable(csc(b*x+a)^2/(d*x+c)^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc^2(a+bx)}{(c+dx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[a + b*x]^2/(c + d*x)^2,x]
[Out] Defer[Int][Csc[a + b*x]^2/(c + d*x)^2, x]
```

Rubi steps

$$\int \frac{\csc^2(a+bx)}{(c+dx)^2}\,dx=\int \frac{\csc^2(a+bx)}{(c+dx)^2}\,dx$$

Mathematica [A] time = 6.72, size = 0, normalized size = 0.00

$$\int \frac{\csc^2(a+bx)}{(c+dx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[a + b*x]^2/(c + d*x)^2,x]
[Out] Integrate[Csc[a + b*x]^2/(c + d*x)^2, x]
```

fricas [A] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\csc(bx+a)^2}{d^2x^2+2\,cdx+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*x+c)^2,x, algorithm="fricas")
[Out] integral(csc(b*x + a)^2/(d^2*x^2 + 2*c*d*x + c^2), x)
```

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

$$\int \frac{\csc (bx+a)^2}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*x+c)^2,x, algorithm="giac")
[Out] integrate(csc(b*x + a)^2/(d*x + c)^2, x)
```

maple [A] time = 0.39, size = 0, normalized size = 0.00

$$\int \frac{\csc^2 (bx+a)}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^2/(d*x+c)^2,x)
[Out] int(csc(b*x+a)^2/(d*x+c)^2,x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^2/(d*x+c)^2,x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{\sin (a+b\,x)^2\,(c+d\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^2*(c + d*x)^2),x)
[Out] int(1/(sin(a + b*x)^2*(c + d*x)^2), x)
```

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

$$\int \frac{\csc^2(a+bx)}{(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**2/(d*x+c)**2,x)
```

```
[Out] Integral(csc(a + b*x)**2/(c + d*x)**2, x)
```

3.33 $\int (c+dx)^3 \csc^3(a+bx)\,dx$

Optimal. Leaf size=309

$$\frac{3id^3\text{Li}_2\left(-e^{i(a+bx)}\right)}{b^4}-\frac{3id^3\text{Li}_2\left(e^{i(a+bx)}\right)}{b^4}-\frac{3id^3\text{Li}_4\left(-e^{i(a+bx)}\right)}{b^4}+\frac{3id^3\text{Li}_4\left(e^{i(a+bx)}\right)}{b^4}-\frac{3d^2(c+dx)\text{Li}_3\left(-e^{i(a+bx)}\right)}{b^3}+\frac{3d^2(c+$$

```
[Out] -6*d^2*(d*x+c)*arctanh(exp(I*(b*x+a)))/b^3-(d*x+c)^3*arctanh(exp(I*(b*x+a))
)/b-3/2*d*(d*x+c)^2*csc(b*x+a)/b^2-1/2*(d*x+c)^3*cot(b*x+a)*csc(b*x+a)/b+3*
I*d^3*polylog(2,-exp(I*(b*x+a)))/b^4+3/2*I*d*(d*x+c)^2*polylog(2,-exp(I*(b*
x+a)))/b^2-3*I*d^3*polylog(2,exp(I*(b*x+a)))/b^4-3/2*I*d*(d*x+c)^2*polylog(
2,exp(I*(b*x+a)))/b^2-3*d^2*(d*x+c)*polylog(3,-exp(I*(b*x+a)))/b^3+3*d^2*(d
*x+c)*polylog(3,exp(I*(b*x+a)))/b^3-3*I*d^3*polylog(4,-exp(I*(b*x+a)))/b^4+
3*I*d^3*polylog(4,exp(I*(b*x+a)))/b^4
```

Rubi [A] time = 0.23, antiderivative size = 309, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 8, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4186, 4183, 2279, 2391, 2531, 6609, 2282, 6589}

$$-\frac{3d^2(c+dx)\text{PolyLog}\left(3,-e^{i(a+bx)}\right)}{b^3}+\frac{3d^2(c+dx)\text{PolyLog}\left(3,e^{i(a+bx)}\right)}{b^3}+\frac{3id(c+dx)^2\text{PolyLog}\left(2,-e^{i(a+bx)}\right)}{2b^2}-\frac{3id(c$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*Csc[a + b*x]^3,x]
```

```
[Out] (-6*d^2*(c + d*x)*ArcTanh[E^(I*(a + b*x))])/b^3 - ((c + d*x)^3*ArcTanh[E^(I
*(a + b*x))])/b - (3*d*(c + d*x)^2*Csc[a + b*x])/(2*b^2) - ((c + d*x)^3*Cot
[a + b*x]*Csc[a + b*x])/(2*b) + ((3*I)*d^3*PolyLog[2, -E^(I*(a + b*x))])/b^
4 + (((3*I)/2)*d*(c + d*x)^2*PolyLog[2, -E^(I*(a + b*x))])/b^2 - ((3*I)*d^3
*PolyLog[2, E^(I*(a + b*x))])/b^4 - (((3*I)/2)*d*(c + d*x)^2*PolyLog[2, E^(
I*(a + b*x))])/b^2 - (3*d^2*(c + d*x)*PolyLog[3, -E^(I*(a + b*x))])/b^3 + (
3*d^2*(c + d*x)*PolyLog[3, E^(I*(a + b*x))])/b^3 - ((3*I)*d^3*PolyLog[4, -E
^(I*(a + b*x))])/b^4 + ((3*I)*d^3*PolyLog[4, E^(I*(a + b*x))])/b^4
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
```

```
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

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

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
```

```
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (c+dx)^3 \csc^3(a+bx)\,dx = -\frac{3d(c+dx)^2\csc(a+bx)}{2b^2} - \frac{(c+dx)^3\cot(a+bx)\csc(a+bx)}{2b} + \frac{1}{2}\int (c+dx)^3\csc(a$$

$$= -\frac{6d^2(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b^3} - \frac{(c+dx)^3\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{3d(c+dx)^2\csc(a+b}{2b^2}$$

$$= -\frac{6d^2(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b^3} - \frac{(c+dx)^3\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{3d(c+dx)^2\csc(a+b}{2b^2}$$

$$= -\frac{6d^2(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b^3} - \frac{(c+dx)^3\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{3d(c+dx)^2\csc(a+b}{2b^2}$$

$$= -\frac{6d^2(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b^3} - \frac{(c+dx)^3\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{3d(c+dx)^2\csc(a+b}{2b^2}$$

$$= -\frac{6d^2(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b^3} - \frac{(c+dx)^3\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{3d(c+dx)^2\csc(a+b}{2b^2}$$

Mathematica [A] time = 5.54, size = 528, normalized size = 1.71

$$-\frac{b^3\left(-c^3\right)\log\left(1-e^{i(a+bx)}\right) + b^3c^3\log\left(1+e^{i(a+bx)}\right) - 3b^3c^2dx\log\left(1-e^{i(a+bx)}\right) + 3b^3c^2dx\log\left(1+e^{i(a+bx)}\right) - 3b^3cd}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3*Csc[a + b*x]^3,x]
```

```
[Out] -1/2*(b^2*(c + d*x)^2*(3*d + b*(c + d*x)*Cot[a + b*x])*Csc[a + b*x] - b^3*c
^3*Log[1 - E^(I*(a + b*x))] - 6*b*c*d^2*Log[1 - E^(I*(a + b*x))] - 3*b^3*c^
2*d*x*Log[1 - E^(I*(a + b*x))] - 6*b*d^3*x*Log[1 - E^(I*(a + b*x))] - 3*b^3
*c*d^2*x^2*Log[1 - E^(I*(a + b*x))] - b^3*d^3*x^3*Log[1 - E^(I*(a + b*x))]
+ b^3*c^3*Log[1 + E^(I*(a + b*x))] + 6*b*c*d^2*Log[1 + E^(I*(a + b*x))] + 3
*b^3*c^2*d*x*Log[1 + E^(I*(a + b*x))] + 6*b*d^3*x*Log[1 + E^(I*(a + b*x))]
+ 3*b^3*c*d^2*x^2*Log[1 + E^(I*(a + b*x))] + b^3*d^3*x^3*Log[1 + E^(I*(a +
b*x))] - (3*I)*d*(2*d^2 + b^2*(c + d*x)^2)*PolyLog[2, -E^(I*(a + b*x))] + (
3*I)*d*(2*d^2 + b^2*(c + d*x)^2)*PolyLog[2, E^(I*(a + b*x))] + 6*b*c*d^2*Po
lyLog[3, -E^(I*(a + b*x))] + 6*b*d^3*x*PolyLog[3, -E^(I*(a + b*x))] - 6*b*c
*d^2*PolyLog[3, E^(I*(a + b*x))] - 6*b*d^3*x*PolyLog[3, E^(I*(a + b*x))] +
```

```
(6*I)*d^3*PolyLog[4, -E^(I*(a + b*x))] - (6*I)*d^3*PolyLog[4, E^(I*(a + b*x
))])/b^4
```

fricas [C] time = 0.92, size = 1736, normalized size = 5.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(2*(b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*b^3*c^2*d*x + b^3*c^3)*cos(b*x +
a) + (3*I*b^2*d^3*x^2 + 6*I*b^2*c*d^2*x + 3*I*b^2*c^2*d + 6*I*d^3 + (-3*I*b
^2*d^3*x^2 - 6*I*b^2*c*d^2*x - 3*I*b^2*c^2*d - 6*I*d^3)*cos(b*x + a)^2)*dil
og(cos(b*x + a) + I*sin(b*x + a)) + (-3*I*b^2*d^3*x^2 - 6*I*b^2*c*d^2*x - 3
*I*b^2*c^2*d - 6*I*d^3 + (3*I*b^2*d^3*x^2 + 6*I*b^2*c*d^2*x + 3*I*b^2*c^2*d
 + 6*I*d^3)*cos(b*x + a)^2)*dilog(cos(b*x + a) - I*sin(b*x + a)) + (3*I*b^2
*d^3*x^2 + 6*I*b^2*c*d^2*x + 3*I*b^2*c^2*d + 6*I*d^3 + (-3*I*b^2*d^3*x^2 -
6*I*b^2*c*d^2*x - 3*I*b^2*c^2*d - 6*I*d^3)*cos(b*x + a)^2)*dilog(-cos(b*x +
 a) + I*sin(b*x + a)) + (-3*I*b^2*d^3*x^2 - 6*I*b^2*c*d^2*x - 3*I*b^2*c^2*d
 - 6*I*d^3 + (3*I*b^2*d^3*x^2 + 6*I*b^2*c*d^2*x + 3*I*b^2*c^2*d + 6*I*d^3)*
cos(b*x + a)^2)*dilog(-cos(b*x + a) - I*sin(b*x + a)) + (b^3*d^3*x^3 + 3*b^
3*c*d^2*x^2 + b^3*c^3 + 6*b*c*d^2 - (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^
3 + 6*b*c*d^2 + 3*(b^3*c^2*d + 2*b*d^3)*x)*cos(b*x + a)^2 + 3*(b^3*c^2*d +
2*b*d^3)*x)*log(cos(b*x + a) + I*sin(b*x + a) + 1) + (b^3*d^3*x^3 + 3*b^3*c
*d^2*x^2 + b^3*c^3 + 6*b*c*d^2 - (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + b^3*c^3 +
 6*b*c*d^2 + 3*(b^3*c^2*d + 2*b*d^3)*x)*cos(b*x + a)^2 + 3*(b^3*c^2*d + 2*b
*d^3)*x)*log(cos(b*x + a) - I*sin(b*x + a) + 1) - (b^3*c^3 - 3*a*b^2*c^2*d
+ 3*(a^2 + 2)*b*c*d^2 - (a^3 + 6*a)*d^3 - (b^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2
 + 2)*b*c*d^2 - (a^3 + 6*a)*d^3)*cos(b*x + a)^2)*log(-1/2*cos(b*x + a) + 1/
2*I*sin(b*x + a) + 1/2) - (b^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2 + 2)*b*c*d^2 -
(a^3 + 6*a)*d^3 - (b^3*c^3 - 3*a*b^2*c^2*d + 3*(a^2 + 2)*b*c*d^2 - (a^3 + 6
*a)*d^3)*cos(b*x + a)^2)*log(-1/2*cos(b*x + a) - 1/2*I*sin(b*x + a) + 1/2)
- (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + (a^3 + 6
*a)*d^3 - (b^3*d^3*x^3 + 3*b^3*c*d^2*x^2 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 +
(a^3 + 6*a)*d^3 + 3*(b^3*c^2*d + 2*b*d^3)*x)*cos(b*x + a)^2 + 3*(b^3*c^2*d
+ 2*b*d^3)*x)*log(-cos(b*x + a) + I*sin(b*x + a) + 1) - (b^3*d^3*x^3 + 3*b^
3*c*d^2*x^2 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + (a^3 + 6*a)*d^3 - (b^3*d^3*x^
3 + 3*b^3*c*d^2*x^2 + 3*a*b^2*c^2*d - 3*a^2*b*c*d^2 + (a^3 + 6*a)*d^3 + 3*(
b^3*c^2*d + 2*b*d^3)*x)*cos(b*x + a)^2 + 3*(b^3*c^2*d + 2*b*d^3)*x)*log(-co
s(b*x + a) - I*sin(b*x + a) + 1) + (6*I*d^3*cos(b*x + a)^2 - 6*I*d^3)*polyl
og(4, cos(b*x + a) + I*sin(b*x + a)) + (-6*I*d^3*cos(b*x + a)^2 + 6*I*d^3)*
polylog(4, cos(b*x + a) - I*sin(b*x + a)) + (6*I*d^3*cos(b*x + a)^2 - 6*I*d
^3)*polylog(4, -cos(b*x + a) + I*sin(b*x + a)) + (-6*I*d^3*cos(b*x + a)^2 +
 6*I*d^3)*polylog(4, -cos(b*x + a) - I*sin(b*x + a)) - 6*(b*d^3*x + b*c*d^2
 - (b*d^3*x + b*c*d^2)*cos(b*x + a)^2)*polylog(3, cos(b*x + a) + I*sin(b*x
```

```
+ a)) - 6*(b*d^3*x + b*c*d^2 - (b*d^3*x + b*c*d^2)*cos(b*x + a)^2)*polylog(
3, cos(b*x + a) - I*sin(b*x + a)) + 6*(b*d^3*x + b*c*d^2 - (b*d^3*x + b*c*d
^2)*cos(b*x + a)^2)*polylog(3, -cos(b*x + a) + I*sin(b*x + a)) + 6*(b*d^3*x
 + b*c*d^2 - (b*d^3*x + b*c*d^2)*cos(b*x + a)^2)*polylog(3, -cos(b*x + a) -
 I*sin(b*x + a)) + 6*(b^2*d^3*x^2 + 2*b^2*c*d^2*x + b^2*c^2*d)*sin(b*x + a)
)/(b^4*cos(b*x + a)^2 - b^4)
```

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

$$\int (dx+c)^3 \csc(bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^3*csc(b*x + a)^3, x)
```

maple [B] time = 0.19, size = 1056, normalized size = 3.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*csc(b*x+a)^3,x)
```

```
[Out] 1/b^4*d^3*a^3*arctanh(exp(I*(b*x+a)))-3/b^3*c*d^2*polylog(3,-exp(I*(b*x+a))
)+3/b^3*c*d^2*polylog(3,exp(I*(b*x+a)))-3/b^3*d^3*polylog(3,-exp(I*(b*x+a))
)*x+3/b^3*d^3*polylog(3,exp(I*(b*x+a)))*x-1/b*c^3*arctanh(exp(I*(b*x+a)))-3
/b^4*d^3*ln(exp(I*(b*x+a))+1)*a+3/b^3*d^3*ln(1-exp(I*(b*x+a)))*x+3/b^4*d^3*
ln(1-exp(I*(b*x+a)))*a+6/b^4*d^3*a*arctanh(exp(I*(b*x+a)))-6/b^3*c*d^2*arct
anh(exp(I*(b*x+a)))-3/b^3*d^3*ln(exp(I*(b*x+a))+1)*x+1/b^2/(exp(2*I*(b*x+a)
)-1)^2*(d^3*x^3*b*exp(3*I*(b*x+a))+3*c*d^2*x^2*b*exp(3*I*(b*x+a))+3*c^2*d*x
*b*exp(3*I*(b*x+a))+d^3*x^3*b*exp(I*(b*x+a))+b*c^3*exp(3*I*(b*x+a))+3*c*d^2
*x^2*b*exp(I*(b*x+a))-3*I*d^3*x^2*exp(3*I*(b*x+a))+3*c^2*d*x*b*exp(I*(b*x+a
))-6*I*c*d^2*x*exp(3*I*(b*x+a))+b*c^3*exp(I*(b*x+a))-3*I*c^2*d*exp(3*I*(b*x
+a))+3*I*d^3*x^2*exp(I*(b*x+a))+6*I*c*d^2*x*exp(I*(b*x+a))+3*I*c^2*d*exp(I*
(b*x+a)))+3/2*I/b^2*c^2*d*polylog(2,-exp(I*(b*x+a)))-3/2*I/b^2*c^2*d*polylo
g(2,exp(I*(b*x+a)))+3/2*I/b^2*d^3*polylog(2,-exp(I*(b*x+a)))*x^2-3/2*I/b^2*
d^3*polylog(2,exp(I*(b*x+a)))*x^2+3*I/b^2*polylog(2,-exp(I*(b*x+a)))*c*d^2*
x-3*I/b^2*polylog(2,exp(I*(b*x+a)))*c*d^2*x-3/2/b*c^2*d*ln(exp(I*(b*x+a))+1
)*x-3/2/b^2*c^2*d*ln(exp(I*(b*x+a))+1)*a-3/2/b*c*d^2*ln(exp(I*(b*x+a))+1)*x
^2+3/2/b*c*d^2*ln(1-exp(I*(b*x+a)))*x^2-1/2/b^4*d^3*ln(exp(I*(b*x+a))+1)*a^
3+1/2/b*d^3*ln(1-exp(I*(b*x+a)))*x^3+1/2/b^4*d^3*ln(1-exp(I*(b*x+a)))*a^3-1
/2/b*d^3*ln(exp(I*(b*x+a))+1)*x^3+3/b^2*c^2*d*a*arctanh(exp(I*(b*x+a)))-3/b
^3*c*d^2*a^2*arctanh(exp(I*(b*x+a)))-3/2/b^3*c*d^2*a^2*ln(1-exp(I*(b*x+a)))
+3/2/b^3*c*d^2*a^2*ln(exp(I*(b*x+a))+1)+3/2/b*c^2*d*ln(1-exp(I*(b*x+a)))*x+
```

```
3/2/b^2*c^2*d*ln(1-exp(I*(b*x+a)))*a-3*I*d^3*polylog(4,-exp(I*(b*x+a)))/b^4
-3*I*d^3*polylog(2,exp(I*(b*x+a)))/b^4+3*I*d^3*polylog(2,-exp(I*(b*x+a)))/b
^4+3*I*d^3*polylog(4,exp(I*(b*x+a)))/b^4
```

maxima [B] time = 3.89, size = 3877, normalized size = 12.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(c^3*(2*cos(b*x + a)/(cos(b*x + a)^2 - 1) - log(cos(b*x + a) + 1) + log
(cos(b*x + a) - 1)) - 3*a*c^2*d*(2*cos(b*x + a)/(cos(b*x + a)^2 - 1) - log(
cos(b*x + a) + 1) + log(cos(b*x + a) - 1))/b + 3*a^2*c*d^2*(2*cos(b*x + a)/
(cos(b*x + a)^2 - 1) - log(cos(b*x + a) + 1) + log(cos(b*x + a) - 1))/b^2 -
 a^3*d^3*(2*cos(b*x + a)/(cos(b*x + a)^2 - 1) - log(cos(b*x + a) + 1) + log
(cos(b*x + a) - 1))/b^3 - 4*((2*(b*x + a)^3*d^3 + 12*b*c*d^2 - 12*a*d^3 + 6
*(b*c*d^2 - a*d^3)*(b*x + a)^2 + 6*(b^2*c^2*d - 2*a*b*c*d^2 + (a^2 + 2)*d^3
)*(b*x + a) + 2*((b*x + a)^3*d^3 + 6*b*c*d^2 - 6*a*d^3 + 3*(b*c*d^2 - a*d^3
)*(b*x + a)^2 + 3*(b^2*c^2*d - 2*a*b*c*d^2 + (a^2 + 2)*d^3)*(b*x + a))*cos(
4*b*x + 4*a) - 4*((b*x + a)^3*d^3 + 6*b*c*d^2 - 6*a*d^3 + 3*(b*c*d^2 - a*d^
3)*(b*x + a)^2 + 3*(b^2*c^2*d - 2*a*b*c*d^2 + (a^2 + 2)*d^3)*(b*x + a))*cos
(2*b*x + 2*a) + (2*I*(b*x + a)^3*d^3 + 12*I*b*c*d^2 - 12*I*a*d^3 + (6*I*b*c
*d^2 - 6*I*a*d^3)*(b*x + a)^2 + (6*I*b^2*c^2*d - 12*I*a*b*c*d^2 + (6*I*a^2
+ 12*I)*d^3)*(b*x + a))*sin(4*b*x + 4*a) + (-4*I*(b*x + a)^3*d^3 - 24*I*b*c
*d^2 + 24*I*a*d^3 + (-12*I*b*c*d^2 + 12*I*a*d^3)*(b*x + a)^2 + (-12*I*b^2*c
^2*d + 24*I*a*b*c*d^2 + (-12*I*a^2 - 24*I)*d^3)*(b*x + a))*sin(2*b*x + 2*a)
)*arctan2(sin(b*x + a), cos(b*x + a) + 1) - (12*b*c*d^2 - 12*a*d^3 + 12*(b*
c*d^2 - a*d^3)*cos(4*b*x + 4*a) - 24*(b*c*d^2 - a*d^3)*cos(2*b*x + 2*a) - (
-12*I*b*c*d^2 + 12*I*a*d^3)*sin(4*b*x + 4*a) - (24*I*b*c*d^2 - 24*I*a*d^3)*
sin(2*b*x + 2*a))*arctan2(sin(b*x + a), cos(b*x + a) - 1) + (2*(b*x + a)^3*
d^3 + 6*(b*c*d^2 - a*d^3)*(b*x + a)^2 + 6*(b^2*c^2*d - 2*a*b*c*d^2 + (a^2 +
 2)*d^3)*(b*x + a) + 2*((b*x + a)^3*d^3 + 3*(b*c*d^2 - a*d^3)*(b*x + a)^2 +
 3*(b^2*c^2*d - 2*a*b*c*d^2 + (a^2 + 2)*d^3)*(b*x + a))*cos(4*b*x + 4*a) -
4*((b*x + a)^3*d^3 + 3*(b*c*d^2 - a*d^3)*(b*x + a)^2 + 3*(b^2*c^2*d - 2*a*b
*c*d^2 + (a^2 + 2)*d^3)*(b*x + a))*cos(2*b*x + 2*a) + (2*I*(b*x + a)^3*d^3
+ (6*I*b*c*d^2 - 6*I*a*d^3)*(b*x + a)^2 + (6*I*b^2*c^2*d - 12*I*a*b*c*d^2 +
 (6*I*a^2 + 12*I)*d^3)*(b*x + a))*sin(4*b*x + 4*a) + (-4*I*(b*x + a)^3*d^3
+ (-12*I*b*c*d^2 + 12*I*a*d^3)*(b*x + a)^2 + (-12*I*b^2*c^2*d + 24*I*a*b*c*
d^2 + (-12*I*a^2 - 24*I)*d^3)*(b*x + a))*sin(2*b*x + 2*a))*arctan2(sin(b*x
+ a), -cos(b*x + a) + 1) + (4*I*(b*x + a)^3*d^3 + 12*b^2*c^2*d - 24*a*b*c*d
^2 + 12*a^2*d^3 + (12*I*b*c*d^2 - 12*(I*a - 1)*d^3)*(b*x + a)^2 + (12*I*b^2
*c^2*d - 24*(I*a - 1)*b*c*d^2 + (12*I*a^2 - 24*a)*d^3)*(b*x + a))*cos(3*b*x
 + 3*a) + (4*I*(b*x + a)^3*d^3 - 12*b^2*c^2*d + 24*a*b*c*d^2 - 12*a^2*d^3 -
 12*(-I*b*c*d^2 + (I*a + 1)*d^3)*(b*x + a)^2 + (12*I*b^2*c^2*d - 24*(I*a +
```

```
1)*b*c*d^2 + (12*I*a^2 + 24*a)*d^3)*(b*x + a))*cos(b*x + a) - (6*b^2*c^2*d
- 12*a*b*c*d^2 + 6*(b*x + a)^2*d^3 + 6*(a^2 + 2)*d^3 + 12*(b*c*d^2 - a*d^3)
*(b*x + a) + 6*(b^2*c^2*d - 2*a*b*c*d^2 + (b*x + a)^2*d^3 + (a^2 + 2)*d^3 +
 2*(b*c*d^2 - a*d^3)*(b*x + a))*cos(4*b*x + 4*a) - 12*(b^2*c^2*d - 2*a*b*c*
d^2 + (b*x + a)^2*d^3 + (a^2 + 2)*d^3 + 2*(b*c*d^2 - a*d^3)*(b*x + a))*cos(
2*b*x + 2*a) - (-6*I*b^2*c^2*d + 12*I*a*b*c*d^2 - 6*I*(b*x + a)^2*d^3 + (-6
*I*a^2 - 12*I)*d^3 + (-12*I*b*c*d^2 + 12*I*a*d^3)*(b*x + a))*sin(4*b*x + 4*
a) - (12*I*b^2*c^2*d - 24*I*a*b*c*d^2 + 12*I*(b*x + a)^2*d^3 + (12*I*a^2 +
24*I)*d^3 + (24*I*b*c*d^2 - 24*I*a*d^3)*(b*x + a))*sin(2*b*x + 2*a))*dilog(
-e^(I*b*x + I*a)) + (6*b^2*c^2*d - 12*a*b*c*d^2 + 6*(b*x + a)^2*d^3 + 6*(a^
2 + 2)*d^3 + 12*(b*c*d^2 - a*d^3)*(b*x + a) + 6*(b^2*c^2*d - 2*a*b*c*d^2 +
(b*x + a)^2*d^3 + (a^2 + 2)*d^3 + 2*(b*c*d^2 - a*d^3)*(b*x + a))*cos(4*b*x
+ 4*a) - 12*(b^2*c^2*d - 2*a*b*c*d^2 + (b*x + a)^2*d^3 + (a^2 + 2)*d^3 + 2*
(b*c*d^2 - a*d^3)*(b*x + a))*cos(2*b*x + 2*a) + (6*I*b^2*c^2*d - 12*I*a*b*c
*d^2 + 6*I*(b*x + a)^2*d^3 + (6*I*a^2 + 12*I)*d^3 + (12*I*b*c*d^2 - 12*I*a*
d^3)*(b*x + a))*sin(4*b*x + 4*a) + (-12*I*b^2*c^2*d + 24*I*a*b*c*d^2 - 12*I
*(b*x + a)^2*d^3 + (-12*I*a^2 - 24*I)*d^3 + (-24*I*b*c*d^2 + 24*I*a*d^3)*(b
*x + a))*sin(2*b*x + 2*a))*dilog(e^(I*b*x + I*a)) + (-I*(b*x + a)^3*d^3 - 6
*I*b*c*d^2 + 6*I*a*d^3 + (-3*I*b*c*d^2 + 3*I*a*d^3)*(b*x + a)^2 + (-3*I*b^2
*c^2*d + 6*I*a*b*c*d^2 + (-3*I*a^2 - 6*I)*d^3)*(b*x + a) + (-I*(b*x + a)^3*
d^3 - 6*I*b*c*d^2 + 6*I*a*d^3 + (-3*I*b*c*d^2 + 3*I*a*d^3)*(b*x + a)^2 + (-
3*I*b^2*c^2*d + 6*I*a*b*c*d^2 + (-3*I*a^2 - 6*I)*d^3)*(b*x + a))*cos(4*b*x
+ 4*a) + (2*I*(b*x + a)^3*d^3 + 12*I*b*c*d^2 - 12*I*a*d^3 + (6*I*b*c*d^2 -
6*I*a*d^3)*(b*x + a)^2 + (6*I*b^2*c^2*d - 12*I*a*b*c*d^2 + (6*I*a^2 + 12*I)
*d^3)*(b*x + a))*cos(2*b*x + 2*a) + ((b*x + a)^3*d^3 + 6*b*c*d^2 - 6*a*d^3
+ 3*(b*c*d^2 - a*d^3)*(b*x + a)^2 + 3*(b^2*c^2*d - 2*a*b*c*d^2 + (a^2 + 2)*
d^3)*(b*x + a))*sin(4*b*x + 4*a) - 2*((b*x + a)^3*d^3 + 6*b*c*d^2 - 6*a*d^3
 + 3*(b*c*d^2 - a*d^3)*(b*x + a)^2 + 3*(b^2*c^2*d - 2*a*b*c*d^2 + (a^2 + 2)
*d^3)*(b*x + a))*sin(2*b*x + 2*a))*log(cos(b*x + a)^2 + sin(b*x + a)^2 + 2*
cos(b*x + a) + 1) + (I*(b*x + a)^3*d^3 + 6*I*b*c*d^2 - 6*I*a*d^3 + (3*I*b*c
*d^2 - 3*I*a*d^3)*(b*x + a)^2 + (3*I*b^2*c^2*d - 6*I*a*b*c*d^2 + (3*I*a^2 +
 6*I)*d^3)*(b*x + a) + (I*(b*x + a)^3*d^3 + 6*I*b*c*d^2 - 6*I*a*d^3 + (3*I*
b*c*d^2 - 3*I*a*d^3)*(b*x + a)^2 + (3*I*b^2*c^2*d - 6*I*a*b*c*d^2 + (3*I*a^
2 + 6*I)*d^3)*(b*x + a))*cos(4*b*x + 4*a) + (-2*I*(b*x + a)^3*d^3 - 12*I*b*
c*d^2 + 12*I*a*d^3 + (-6*I*b*c*d^2 + 6*I*a*d^3)*(b*x + a)^2 + (-6*I*b^2*c^2
*d + 12*I*a*b*c*d^2 + (-6*I*a^2 - 12*I)*d^3)*(b*x + a))*cos(2*b*x + 2*a) -
((b*x + a)^3*d^3 + 6*b*c*d^2 - 6*a*d^3 + 3*(b*c*d^2 - a*d^3)*(b*x + a)^2 +
3*(b^2*c^2*d - 2*a*b*c*d^2 + (a^2 + 2)*d^3)*(b*x + a))*sin(4*b*x + 4*a) + 2
*((b*x + a)^3*d^3 + 6*b*c*d^2 - 6*a*d^3 + 3*(b*c*d^2 - a*d^3)*(b*x + a)^2 +
 3*(b^2*c^2*d - 2*a*b*c*d^2 + (a^2 + 2)*d^3)*(b*x + a))*sin(2*b*x + 2*a))*l
og(cos(b*x + a)^2 + sin(b*x + a)^2 - 2*cos(b*x + a) + 1) + (12*d^3*cos(4*b*
x + 4*a) - 24*d^3*cos(2*b*x + 2*a) + 12*I*d^3*sin(4*b*x + 4*a) - 24*I*d^3*s
in(2*b*x + 2*a) + 12*d^3)*polylog(4, -e^(I*b*x + I*a)) - (12*d^3*cos(4*b*x
+ 4*a) - 24*d^3*cos(2*b*x + 2*a) + 12*I*d^3*sin(4*b*x + 4*a) - 24*I*d^3*sin
(2*b*x + 2*a) + 12*d^3)*polylog(4, e^(I*b*x + I*a)) + (-12*I*b*c*d^2 - 12*I
```

```
*(b*x + a)*d^3 + 12*I*a*d^3 + (-12*I*b*c*d^2 - 12*I*(b*x + a)*d^3 + 12*I*a*
d^3)*cos(4*b*x + 4*a) + (24*I*b*c*d^2 + 24*I*(b*x + a)*d^3 - 24*I*a*d^3)*co
s(2*b*x + 2*a) + 12*(b*c*d^2 + (b*x + a)*d^3 - a*d^3)*sin(4*b*x + 4*a) - 24
*(b*c*d^2 + (b*x + a)*d^3 - a*d^3)*sin(2*b*x + 2*a))*polylog(3, -e^(I*b*x +
 I*a)) + (12*I*b*c*d^2 + 12*I*(b*x + a)*d^3 - 12*I*a*d^3 + (12*I*b*c*d^2 +
12*I*(b*x + a)*d^3 - 12*I*a*d^3)*cos(4*b*x + 4*a) + (-24*I*b*c*d^2 - 24*I*(
b*x + a)*d^3 + 24*I*a*d^3)*cos(2*b*x + 2*a) - 12*(b*c*d^2 + (b*x + a)*d^3 -
 a*d^3)*sin(4*b*x + 4*a) + 24*(b*c*d^2 + (b*x + a)*d^3 - a*d^3)*sin(2*b*x +
 2*a))*polylog(3, e^(I*b*x + I*a)) - (4*(b*x + a)^3*d^3 - 12*I*b^2*c^2*d +
24*I*a*b*c*d^2 - 12*I*a^2*d^3 + (12*b*c*d^2 - (12*a + 12*I)*d^3)*(b*x + a)^
2 + (12*b^2*c^2*d - (24*a + 24*I)*b*c*d^2 + 12*(a^2 + 2*I*a)*d^3)*(b*x + a)
)*sin(3*b*x + 3*a) - (4*(b*x + a)^3*d^3 + 12*I*b^2*c^2*d - 24*I*a*b*c*d^2 +
 12*I*a^2*d^3 + (12*b*c*d^2 - (12*a - 12*I)*d^3)*(b*x + a)^2 + (12*b^2*c^2*
d - (24*a - 24*I)*b*c*d^2 + 12*(a^2 - 2*I*a)*d^3)*(b*x + a))*sin(b*x + a))/
(-4*I*b^3*cos(4*b*x + 4*a) + 8*I*b^3*cos(2*b*x + 2*a) + 4*b^3*sin(4*b*x + 4
*a) - 8*b^3*sin(2*b*x + 2*a) - 4*I*b^3))/b
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^3/sin(a + b*x)^3,x)
[Out] \text{Hanged}
```

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

$$\int (c + dx)^3 \csc^3 (a + bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*csc(b*x+a)**3,x)
[Out] Integral((c + d*x)**3*csc(a + b*x)**3, x)
```

3.34 $\int (c+dx)^2 \csc^3(a+bx)\,dx$

Optimal. Leaf size=180

$$-\frac{d^2\text{Li}_3\left(-e^{i(a+bx)}\right)}{b^3}+\frac{d^2\text{Li}_3\left(e^{i(a+bx)}\right)}{b^3}-\frac{d^2\tanh^{-1}(\cos(a+bx))}{b^3}+\frac{id(c+dx)\text{Li}_2\left(-e^{i(a+bx)}\right)}{b^2}-\frac{id(c+dx)\text{Li}_2\left(e^{i(a+bx)}\right)}{b^2}-\frac{d}{}$$

```
[Out] -(d*x+c)^2*arctanh(exp(I*(b*x+a)))/b-d^2*arctanh(cos(b*x+a))/b^3-d*(d*x+c)*
csc(b*x+a)/b^2-1/2*(d*x+c)^2*cot(b*x+a)*csc(b*x+a)/b+I*d*(d*x+c)*polylog(2,
-exp(I*(b*x+a)))/b^2-I*d*(d*x+c)*polylog(2,exp(I*(b*x+a)))/b^2-d^2*polylog(
3,-exp(I*(b*x+a)))/b^3+d^2*polylog(3,exp(I*(b*x+a)))/b^3
```

Rubi [A] time = 0.14, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4186, 3770, 4183, 2531, 2282, 6589}

$$\frac{id(c+dx)\text{PolyLog}\left(2,-e^{i(a+bx)}\right)}{b^2}-\frac{id(c+dx)\text{PolyLog}\left(2,e^{i(a+bx)}\right)}{b^2}-\frac{d^2\text{PolyLog}\left(3,-e^{i(a+bx)}\right)}{b^3}+\frac{d^2\text{PolyLog}\left(3,e^{i(a+b}\right.}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*Csc[a + b*x]^3,x]
```

```
[Out] -(((c + d*x)^2*ArcTanh[E^(I*(a + b*x))])/b) - (d^2*ArcTanh[Cos[a + b*x]])/b
^3 - (d*(c + d*x)*Csc[a + b*x])/b^2 - ((c + d*x)^2*Cot[a + b*x]*Csc[a + b*x
])/(2*b) + (I*d*(c + d*x)*PolyLog[2, -E^(I*(a + b*x))])/b^2 - (I*d*(c + d*x
)*PolyLog[2, E^(I*(a + b*x))])/b^2 - (d^2*PolyLog[3, -E^(I*(a + b*x))])/b^3
 + (d^2*PolyLog[3, E^(I*(a + b*x))])/b^3
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3770

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int (c+dx)^2 \csc^3(a+bx)\,dx = -\frac{d(c+dx)\csc(a+bx)}{b^2} - \frac{(c+dx)^2\cot(a+bx)\csc(a+bx)}{2b} + \frac{1}{2}\int (c+dx)^2 \csc(a+$$
$$= -\frac{(c+dx)^2\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{d^2\tanh^{-1}(\cos(a+bx))}{b^3} - \frac{d(c+dx)\csc(a+bx)}{b^2} - \frac{(c}{}$$
$$= -\frac{(c+dx)^2\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{d^2\tanh^{-1}(\cos(a+bx))}{b^3} - \frac{d(c+dx)\csc(a+bx)}{b^2} - \frac{(c}{}$$
$$= -\frac{(c+dx)^2\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{d^2\tanh^{-1}(\cos(a+bx))}{b^3} - \frac{d(c+dx)\csc(a+bx)}{b^2} - \frac{(c}{}$$
$$= -\frac{(c+dx)^2\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{d^2\tanh^{-1}(\cos(a+bx))}{b^3} - \frac{d(c+dx)\csc(a+bx)}{b^2} - \frac{(c}{}$$

<u>**Mathematica**</u> [**B**] time = 7.64, size = 471, normalized size = 2.62

$$\frac{\csc\left(\frac{a}{2}\right)\csc\left(\frac{a}{2}+\frac{bx}{2}\right)\left(cd\sin\left(\frac{bx}{2}\right)+d^2x\sin\left(\frac{bx}{2}\right)\right)}{2b^2}+\frac{\sec\left(\frac{a}{2}\right)\sec\left(\frac{a}{2}+\frac{bx}{2}\right)\left(d^2(-x)\sin\left(\frac{bx}{2}\right)-cd\sin\left(\frac{bx}{2}\right)\right)}{2b^2}-\frac{d\csc(a)(c}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*Csc[a + b*x]^3,x]
```

```
[Out] -((d*(c + d*x)*Csc[a])/b^2) + ((-c^2 - 2*c*d*x - d^2*x^2)*Csc[a/2 + (b*x)/2
]^2)/(8*b) + (b^2*c^2*Log[1 - E^(I*(a + b*x))] + 2*d^2*Log[1 - E^(I*(a + b*
x))] + 2*b^2*c*d*x*Log[1 - E^(I*(a + b*x))] + b^2*d^2*x^2*Log[1 - E^(I*(a +
 b*x))] - b^2*c^2*Log[1 + E^(I*(a + b*x))] - 2*d^2*Log[1 + E^(I*(a + b*x))]
 - 2*b^2*c*d*x*Log[1 + E^(I*(a + b*x))] - b^2*d^2*x^2*Log[1 + E^(I*(a + b*x
))] + (2*I)*b*d*(c + d*x)*PolyLog[2, -E^(I*(a + b*x))] - (2*I)*b*d*(c + d*x
)*PolyLog[2, E^(I*(a + b*x))] - 2*d^2*PolyLog[3, -E^(I*(a + b*x))] + 2*d^2*
PolyLog[3, E^(I*(a + b*x))])/(2*b^3) + ((c^2 + 2*c*d*x + d^2*x^2)*Sec[a/2 +
 (b*x)/2]^2)/(8*b) + (Sec[a/2]*Sec[a/2 + (b*x)/2]*(-(c*d*Sin[(b*x)/2]) - d^
2*x*Sin[(b*x)/2]))/(2*b^2) + (Csc[a/2]*Csc[a/2 + (b*x)/2]*(c*d*Sin[(b*x)/2]
 + d^2*x*Sin[(b*x)/2]))/(2*b^2)
```

<u>**fricas**</u> [**C**] time = 0.87, size = 968, normalized size = 5.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*csc(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(b*x + a) + (2*I*b*d^2*x +
2*I*b*c*d + (-2*I*b*d^2*x - 2*I*b*c*d)*cos(b*x + a)^2)*dilog(cos(b*x + a) +
 I*sin(b*x + a)) + (-2*I*b*d^2*x - 2*I*b*c*d + (2*I*b*d^2*x + 2*I*b*c*d)*co
s(b*x + a)^2)*dilog(cos(b*x + a) - I*sin(b*x + a)) + (2*I*b*d^2*x + 2*I*b*c
*d + (-2*I*b*d^2*x - 2*I*b*c*d)*cos(b*x + a)^2)*dilog(-cos(b*x + a) + I*sin
(b*x + a)) + (-2*I*b*d^2*x - 2*I*b*c*d + (2*I*b*d^2*x + 2*I*b*c*d)*cos(b*x
+ a)^2)*dilog(-cos(b*x + a) - I*sin(b*x + a)) + (b^2*d^2*x^2 + 2*b^2*c*d*x
+ b^2*c^2 - (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 + 2*d^2)*cos(b*x + a)^2 +
2*d^2)*log(cos(b*x + a) + I*sin(b*x + a) + 1) + (b^2*d^2*x^2 + 2*b^2*c*d*x
+ b^2*c^2 - (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 + 2*d^2)*cos(b*x + a)^2 +
2*d^2)*log(cos(b*x + a) - I*sin(b*x + a) + 1) - (b^2*c^2 - 2*a*b*c*d + (a^2
 + 2)*d^2 - (b^2*c^2 - 2*a*b*c*d + (a^2 + 2)*d^2)*cos(b*x + a)^2)*log(-1/2*
cos(b*x + a) + 1/2*I*sin(b*x + a) + 1/2) - (b^2*c^2 - 2*a*b*c*d + (a^2 + 2)
*d^2 - (b^2*c^2 - 2*a*b*c*d + (a^2 + 2)*d^2)*cos(b*x + a)^2)*log(-1/2*cos(b
*x + a) - 1/2*I*sin(b*x + a) + 1/2) - (b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*
d - a^2*d^2 - (b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*cos(b*x + a
)^2)*log(-cos(b*x + a) + I*sin(b*x + a) + 1) - (b^2*d^2*x^2 + 2*b^2*c*d*x +
 2*a*b*c*d - a^2*d^2 - (b^2*d^2*x^2 + 2*b^2*c*d*x + 2*a*b*c*d - a^2*d^2)*co
s(b*x + a)^2)*log(-cos(b*x + a) - I*sin(b*x + a) + 1) + 2*(d^2*cos(b*x + a)
^2 - d^2)*polylog(3, cos(b*x + a) + I*sin(b*x + a)) + 2*(d^2*cos(b*x + a)^2
 - d^2)*polylog(3, cos(b*x + a) - I*sin(b*x + a)) - 2*(d^2*cos(b*x + a)^2 -
 d^2)*polylog(3, -cos(b*x + a) + I*sin(b*x + a)) - 2*(d^2*cos(b*x + a)^2 -
d^2)*polylog(3, -cos(b*x + a) - I*sin(b*x + a)) + 4*(b*d^2*x + b*c*d)*sin(b
*x + a))/(b^3*cos(b*x + a)^2 - b^3)
```

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

$$\int (dx+c)^2 \csc (bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*csc(b*x+a)^3,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^2*csc(b*x + a)^3, x)
```

maple [B] time = 0.12, size = 548, normalized size = 3.04

$$\frac{d^2x^2b\,e^{3i(bx+a)} + 2cdxb\,e^{3i(bx+a)} + b\,c^2e^{3i(bx+a)} + d^2x^2b\,e^{i(bx+a)} + 2cdxb\,e^{i(bx+a)} - 2id^2x\,e^{3i(bx+a)} + b\,c^2e^{i(bx+a)} - 2i}{b^2\left(e^{2i(bx+a)}-1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*csc(b*x+a)^3,x)
```

```
[Out] 1/b^2/(exp(2*I*(b*x+a))-1)^2*(d^2*x^2*b*exp(3*I*(b*x+a))+2*c*d*x*b*exp(3*I*
(b*x+a))+b*c^2*exp(3*I*(b*x+a))+d^2*x^2*b*exp(I*(b*x+a))+2*c*d*x*b*exp(I*(b
```

```
*x+a))-2*I*d^2*x*exp(3*I*(b*x+a))+b*c^2*exp(I*(b*x+a))-2*I*d*c*exp(3*I*(b*x
+a))+2*I*d^2*x*exp(I*(b*x+a))+2*I*d*c*exp(I*(b*x+a)))+1/2/b^3*d^2*ln(exp(I*
(b*x+a))+1)*a^2-1/2/b^3*d^2*ln(1-exp(I*(b*x+a)))*a^2-1/b*c^2*arctanh(exp(I*
(b*x+a)))-1/b^3*d^2*a^2*arctanh(exp(I*(b*x+a)))-d^2*polylog(3,-exp(I*(b*x+a
)))/b^3+d^2*polylog(3,exp(I*(b*x+a)))/b^3-2/b^3*d^2*arctanh(exp(I*(b*x+a)))
-1/2/b*d^2*ln(exp(I*(b*x+a))+1)*x^2-I/b^2*c*d*polylog(2,exp(I*(b*x+a)))+1/2
/b*d^2*ln(1-exp(I*(b*x+a)))*x^2+I/b^2*c*d*polylog(2,-exp(I*(b*x+a)))-1/b*c*
d*ln(exp(I*(b*x+a))+1)*x-1/b^2*c*d*ln(exp(I*(b*x+a))+1)*a+1/b*c*d*ln(1-exp(
I*(b*x+a)))*x+1/b^2*c*d*ln(1-exp(I*(b*x+a)))*a+2/b^2*c*d*a*arctanh(exp(I*(b
*x+a)))-I/b^2*polylog(2,exp(I*(b*x+a)))*d^2*x+I/b^2*polylog(2,-exp(I*(b*x+a
)))*d^2*x
```

maxima [B] time = 1.88, size = 1934, normalized size = 10.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*csc(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(c^2*(2*cos(b*x + a)/(cos(b*x + a)^2 - 1) - log(cos(b*x + a) + 1) + log
(cos(b*x + a) - 1)) - 2*a*c*d*(2*cos(b*x + a)/(cos(b*x + a)^2 - 1) - log(co
s(b*x + a) + 1) + log(cos(b*x + a) - 1))/b + a^2*d^2*(2*cos(b*x + a)/(cos(b
*x + a)^2 - 1) - log(cos(b*x + a) + 1) + log(cos(b*x + a) - 1))/b^2 - 4*((2
*(b*x + a)^2*d^2 + 4*(b*c*d - a*d^2)*(b*x + a) + 4*d^2 + 2*((b*x + a)^2*d^2
 + 2*(b*c*d - a*d^2)*(b*x + a) + 2*d^2)*cos(4*b*x + 4*a) - 4*((b*x + a)^2*d
^2 + 2*(b*c*d - a*d^2)*(b*x + a) + 2*d^2)*cos(2*b*x + 2*a) + (2*I*(b*x + a)
^2*d^2 + (4*I*b*c*d - 4*I*a*d^2)*(b*x + a) + 4*I*d^2)*sin(4*b*x + 4*a) + (-
4*I*(b*x + a)^2*d^2 + (-8*I*b*c*d + 8*I*a*d^2)*(b*x + a) - 8*I*d^2)*sin(2*b
*x + 2*a))*arctan2(sin(b*x + a), cos(b*x + a) + 1) - (4*d^2*cos(4*b*x + 4*a
) - 8*d^2*cos(2*b*x + 2*a) + 4*I*d^2*sin(4*b*x + 4*a) - 8*I*d^2*sin(2*b*x +
 2*a) + 4*d^2)*arctan2(sin(b*x + a), cos(b*x + a) - 1) + (2*(b*x + a)^2*d^2
 + 4*(b*c*d - a*d^2)*(b*x + a) + 2*((b*x + a)^2*d^2 + 2*(b*c*d - a*d^2)*(b*
x + a))*cos(4*b*x + 4*a) - 4*((b*x + a)^2*d^2 + 2*(b*c*d - a*d^2)*(b*x + a)
)*cos(2*b*x + 2*a) + (2*I*(b*x + a)^2*d^2 + (4*I*b*c*d - 4*I*a*d^2)*(b*x +
a))*sin(4*b*x + 4*a) + (-4*I*(b*x + a)^2*d^2 + (-8*I*b*c*d + 8*I*a*d^2)*(b*
x + a))*sin(2*b*x + 2*a))*arctan2(sin(b*x + a), -cos(b*x + a) + 1) + (4*I*(
b*x + a)^2*d^2 + 8*b*c*d - 8*a*d^2 + (8*I*b*c*d - 8*(I*a - 1)*d^2)*(b*x + a
))*cos(3*b*x + 3*a) + (4*I*(b*x + a)^2*d^2 - 8*b*c*d + 8*a*d^2 - 8*(-I*b*c*
d + (I*a + 1)*d^2)*(b*x + a))*cos(b*x + a) - (4*b*c*d + 4*(b*x + a)*d^2 - 4
*a*d^2 + 4*(b*c*d + (b*x + a)*d^2 - a*d^2)*cos(4*b*x + 4*a) - 8*(b*c*d + (b
*x + a)*d^2 - a*d^2)*cos(2*b*x + 2*a) - (-4*I*b*c*d - 4*I*(b*x + a)*d^2 + 4
*I*a*d^2)*sin(4*b*x + 4*a) - (8*I*b*c*d + 8*I*(b*x + a)*d^2 - 8*I*a*d^2)*si
n(2*b*x + 2*a))*dilog(-e^(I*b*x + I*a)) + (4*b*c*d + 4*(b*x + a)*d^2 - 4*a*
d^2 + 4*(b*c*d + (b*x + a)*d^2 - a*d^2)*cos(4*b*x + 4*a) - 8*(b*c*d + (b*x
+ a)*d^2 - a*d^2)*cos(2*b*x + 2*a) + (4*I*b*c*d + 4*I*(b*x + a)*d^2 - 4*I*a
```

```
*d^2)*sin(4*b*x + 4*a) + (-8*I*b*c*d - 8*I*(b*x + a)*d^2 + 8*I*a*d^2)*sin(2
*b*x + 2*a))*dilog(e^(I*b*x + I*a)) + (-I*(b*x + a)^2*d^2 + (-2*I*b*c*d + 2
*I*a*d^2)*(b*x + a) - 2*I*d^2 + (-I*(b*x + a)^2*d^2 + (-2*I*b*c*d + 2*I*a*d
^2)*(b*x + a) - 2*I*d^2)*cos(4*b*x + 4*a) + (2*I*(b*x + a)^2*d^2 + (4*I*b*c
*d - 4*I*a*d^2)*(b*x + a) + 4*I*d^2)*cos(2*b*x + 2*a) + ((b*x + a)^2*d^2 +
2*(b*c*d - a*d^2)*(b*x + a) + 2*d^2)*sin(4*b*x + 4*a) - 2*((b*x + a)^2*d^2
+ 2*(b*c*d - a*d^2)*(b*x + a) + 2*d^2)*sin(2*b*x + 2*a))*log(cos(b*x + a)^2
 + sin(b*x + a)^2 + 2*cos(b*x + a) + 1) + (I*(b*x + a)^2*d^2 + (2*I*b*c*d -
 2*I*a*d^2)*(b*x + a) + 2*I*d^2 + (I*(b*x + a)^2*d^2 + (2*I*b*c*d - 2*I*a*d
^2)*(b*x + a) + 2*I*d^2)*cos(4*b*x + 4*a) + (-2*I*(b*x + a)^2*d^2 + (-4*I*b
*c*d + 4*I*a*d^2)*(b*x + a) - 4*I*d^2)*cos(2*b*x + 2*a) - ((b*x + a)^2*d^2
+ 2*(b*c*d - a*d^2)*(b*x + a) + 2*d^2)*sin(4*b*x + 4*a) + 2*((b*x + a)^2*d^
2 + 2*(b*c*d - a*d^2)*(b*x + a) + 2*d^2)*sin(2*b*x + 2*a))*log(cos(b*x + a)
^2 + sin(b*x + a)^2 - 2*cos(b*x + a) + 1) + (-4*I*d^2*cos(4*b*x + 4*a) + 8*
I*d^2*cos(2*b*x + 2*a) + 4*d^2*sin(4*b*x + 4*a) - 8*d^2*sin(2*b*x + 2*a) -
4*I*d^2)*polylog(3, -e^(I*b*x + I*a)) + (4*I*d^2*cos(4*b*x + 4*a) - 8*I*d^2
*cos(2*b*x + 2*a) - 4*d^2*sin(4*b*x + 4*a) + 8*d^2*sin(2*b*x + 2*a) + 4*I*d
^2)*polylog(3, e^(I*b*x + I*a)) - (4*(b*x + a)^2*d^2 - 8*I*b*c*d + 8*I*a*d^
2 + (8*b*c*d - (8*a + 8*I)*d^2)*(b*x + a))*sin(3*b*x + 3*a) - (4*(b*x + a)^
2*d^2 + 8*I*b*c*d - 8*I*a*d^2 + (8*b*c*d - (8*a - 8*I)*d^2)*(b*x + a))*sin(
b*x + a))/(-4*I*b^2*cos(4*b*x + 4*a) + 8*I*b^2*cos(2*b*x + 2*a) + 4*b^2*sin
(4*b*x + 4*a) - 8*b^2*sin(2*b*x + 2*a) - 4*I*b^2))/b
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^2/sin(a + b*x)^3,x)
```

```
[Out] \text{Hanged}
```

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

$$\int (c + dx)^2 \csc^3 (a + bx) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*csc(b*x+a)**3,x)
```

```
[Out] Integral((c + d*x)**2*csc(a + b*x)**3, x)
```

3.35 $\int (c+dx)\csc^3(a+bx)\,dx$

Optimal. Leaf size=109

$$\frac{id\text{Li}_2\left(-e^{i(a+bx)}\right)}{2b^2}-\frac{id\text{Li}_2\left(e^{i(a+bx)}\right)}{2b^2}-\frac{d\csc(a+bx)}{2b^2}-\frac{(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b}-\frac{(c+dx)\cot(a+bx)\csc(a+bx)}{2b}$$

```
[Out] -(d*x+c)*arctanh(exp(I*(b*x+a)))/b-1/2*d*csc(b*x+a)/b^2-1/2*(d*x+c)*cot(b*x
+a)*csc(b*x+a)/b+1/2*I*d*polylog(2,-exp(I*(b*x+a)))/b^2-1/2*I*d*polylog(2,e
xp(I*(b*x+a)))/b^2
```

Rubi [A] time = 0.07, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4185, 4183, 2279, 2391}

$$\frac{id\text{PolyLog}\left(2,-e^{i(a+bx)}\right)}{2b^2}-\frac{id\text{PolyLog}\left(2,e^{i(a+bx)}\right)}{2b^2}-\frac{d\csc(a+bx)}{2b^2}-\frac{(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b}-\frac{(c+dx)\cot(a+bx)\text{c}}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*Csc[a + b*x]^3,x]
```

```
[Out] -(((c + d*x)*ArcTanh[E^(I*(a + b*x))])/b) - (d*Csc[a + b*x])/(2*b^2) - ((c
+ d*x)*Cot[a + b*x]*Csc[a + b*x])/(2*b) + ((I/2)*d*PolyLog[2, -E^(I*(a + b*
x))])/b^2 - ((I/2)*d*PolyLog[2, E^(I*(a + b*x))])/b^2
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rubi steps

$$\int (c+dx)\csc^3(a+bx)\,dx = -\frac{d\csc(a+bx)}{2b^2} - \frac{(c+dx)\cot(a+bx)\csc(a+bx)}{2b} + \frac{1}{2}\int (c+dx)\csc(a+bx)\,dx$$

$$= -\frac{(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{d\csc(a+bx)}{2b^2} - \frac{(c+dx)\cot(a+bx)\csc(a+bx)}{2b} - \frac{d}{}$$

$$= -\frac{(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{d\csc(a+bx)}{2b^2} - \frac{(c+dx)\cot(a+bx)\csc(a+bx)}{2b} + \frac{(i}{}$$

$$= -\frac{(c+dx)\tanh^{-1}\left(e^{i(a+bx)}\right)}{b} - \frac{d\csc(a+bx)}{2b^2} - \frac{(c+dx)\cot(a+bx)\csc(a+bx)}{2b} + \frac{id}{}$$

Mathematica [B] time = 2.03, size = 292, normalized size = 2.68

$$\frac{d\left(i\left(\text{Li}_2\left(-e^{i(a+bx)}\right)-\text{Li}_2\left(e^{i(a+bx)}\right)\right)+(a+bx)\left(\log\left(1-e^{i(a+bx)}\right)-\log\left(1+e^{i(a+bx)}\right)\right)-a\log\left(\tan\left(\frac{1}{2}(a+bx)\right)\right)\right)}{2b^2}+$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*Csc[a + b*x]^3,x]
```

```
[Out] -1/8*(d*x*Csc[a/2 + (b*x)/2]^2)/b - (c*Csc[(a + b*x)/2]^2)/(8*b) - (c*Log[C
os[(a + b*x)/2]])/(2*b) + (c*Log[Sin[(a + b*x)/2]])/(2*b) + (d*((a + b*x)*(
Log[1 - E^(I*(a + b*x))] - Log[1 + E^(I*(a + b*x))]) - a*Log[Tan[(a + b*x)/
2]] + I*(PolyLog[2, -E^(I*(a + b*x))] - PolyLog[2, E^(I*(a + b*x))])))/(2*b
^2) + (d*x*Sec[a/2 + (b*x)/2]^2)/(8*b) + (c*Sec[(a + b*x)/2]^2)/(8*b) + (d*
Csc[a/2]*Csc[a/2 + (b*x)/2]*Sin[(b*x)/2])/(4*b^2) - (d*Sec[a/2]*Sec[a/2 + (
b*x)/2]*Sin[(b*x)/2])/(4*b^2)
```

fricas [B] time = 0.56, size = 452, normalized size = 4.15

$$\frac{2\,(bdx+bc)\cos(bx+a)+\left(-i\,d\cos(bx+a)^2+i\,d\right)\text{Li}_2(\cos(bx+a)+i\,\sin(bx+a))+\left(i\,d\cos(bx+a)^2-i\,d\right)\text{L}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(2*(b*d*x + b*c)*cos(b*x + a) + (-I*d*cos(b*x + a)^2 + I*d)*dilog(cos(b
*x + a) + I*sin(b*x + a)) + (I*d*cos(b*x + a)^2 - I*d)*dilog(cos(b*x + a) -
 I*sin(b*x + a)) + (-I*d*cos(b*x + a)^2 + I*d)*dilog(-cos(b*x + a) + I*sin(
b*x + a)) + (I*d*cos(b*x + a)^2 - I*d)*dilog(-cos(b*x + a) - I*sin(b*x + a)
) + (b*d*x - (b*d*x + b*c)*cos(b*x + a)^2 + b*c)*log(cos(b*x + a) + I*sin(b
*x + a) + 1) + (b*d*x - (b*d*x + b*c)*cos(b*x + a)^2 + b*c)*log(cos(b*x + a
) - I*sin(b*x + a) + 1) + ((b*c - a*d)*cos(b*x + a)^2 - b*c + a*d)*log(-1/2
*cos(b*x + a) + 1/2*I*sin(b*x + a) + 1/2) + ((b*c - a*d)*cos(b*x + a)^2 - b
*c + a*d)*log(-1/2*cos(b*x + a) - 1/2*I*sin(b*x + a) + 1/2) - (b*d*x - (b*d
*x + a*d)*cos(b*x + a)^2 + a*d)*log(-cos(b*x + a) + I*sin(b*x + a) + 1) - (
b*d*x - (b*d*x + a*d)*cos(b*x + a)^2 + a*d)*log(-cos(b*x + a) - I*sin(b*x +
 a) + 1) + 2*d*sin(b*x + a))/(b^2*cos(b*x + a)^2 - b^2)
```

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

$$\int (dx + c)\csc(bx + a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)*csc(b*x + a)^3, x)
```

maple [B] time = 0.09, size = 246, normalized size = 2.26

$$\frac{dxb\,e^{3i(bx+a)} + cb\,e^{3i(bx+a)} + dxb\,e^{i(bx+a)} + cb\,e^{i(bx+a)} - id\,e^{3i(bx+a)} + id\,e^{i(bx+a)}}{b^2\left(e^{2i(bx+a)} - 1\right)^2} - \frac{c\,\mathrm{arctanh}\left(e^{i(bx+a)}\right)}{b} - \frac{d\ln\left(e^{i(bx+a)} +\right.}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*csc(b*x+a)^3,x)
```

```
[Out] 1/b^2/(exp(2*I*(b*x+a))-1)^2*(d*x*b*exp(3*I*(b*x+a))+c*b*exp(3*I*(b*x+a))+d
*x*b*exp(I*(b*x+a))+c*b*exp(I*(b*x+a))-I*d*exp(3*I*(b*x+a))+I*d*exp(I*(b*x+
a)))-1/b*c*arctanh(exp(I*(b*x+a)))-1/2/b*d*ln(exp(I*(b*x+a))+1)*x-1/2/b^2*d
*ln(exp(I*(b*x+a))+1)*a+1/2*I*d*polylog(2,-exp(I*(b*x+a)))/b^2+1/2/b*d*ln(1
-exp(I*(b*x+a)))*x+1/2/b^2*d*ln(1-exp(I*(b*x+a)))*a-1/2*I*d*polylog(2,exp(I
*(b*x+a)))/b^2+1/b^2*d*a*arctanh(exp(I*(b*x+a)))
```

maxima [B] time = 0.54, size = 769, normalized size = 7.06

$$-\frac{(2\,bdx + 2\,bc + 2\,(bdx + bc)\cos(4\,bx + 4\,a) - 4\,(bdx + bc)\cos(2\,bx + 2\,a) + (2i\,bdx + 2i\,bc)\sin(4\,bx + 4\,a) + (-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -((2*b*d*x + 2*b*c + 2*(b*d*x + b*c)*cos(4*b*x + 4*a) - 4*(b*d*x + b*c)*cos
(2*b*x + 2*a) + (2*I*b*d*x + 2*I*b*c)*sin(4*b*x + 4*a) + (-4*I*b*d*x - 4*I*
b*c)*sin(2*b*x + 2*a))*arctan2(sin(b*x + a), cos(b*x + a) + 1) - (2*b*c*cos
(4*b*x + 4*a) - 4*b*c*cos(2*b*x + 2*a) + 2*I*b*c*sin(4*b*x + 4*a) - 4*I*b*c
*sin(2*b*x + 2*a) + 2*b*c)*arctan2(sin(b*x + a), cos(b*x + a) - 1) + (2*b*d
*x*cos(4*b*x + 4*a) - 4*b*d*x*cos(2*b*x + 2*a) + 2*I*b*d*x*sin(4*b*x + 4*a)
 - 4*I*b*d*x*sin(2*b*x + 2*a) + 2*b*d*x)*arctan2(sin(b*x + a), -cos(b*x + a
) + 1) + (4*I*b*d*x + 4*I*b*c + 4*d)*cos(3*b*x + 3*a) + (4*I*b*d*x + 4*I*b*
c - 4*d)*cos(b*x + a) - (2*d*cos(4*b*x + 4*a) - 4*d*cos(2*b*x + 2*a) + 2*I*
d*sin(4*b*x + 4*a) - 4*I*d*sin(2*b*x + 2*a) + 2*d)*dilog(-e^(I*b*x + I*a))
+ (2*d*cos(4*b*x + 4*a) - 4*d*cos(2*b*x + 2*a) + 2*I*d*sin(4*b*x + 4*a) - 4
*I*d*sin(2*b*x + 2*a) + 2*d)*dilog(e^(I*b*x + I*a)) + (-I*b*d*x - I*b*c + (
-I*b*d*x - I*b*c)*cos(4*b*x + 4*a) + (2*I*b*d*x + 2*I*b*c)*cos(2*b*x + 2*a)
 + (b*d*x + b*c)*sin(4*b*x + 4*a) - 2*(b*d*x + b*c)*sin(2*b*x + 2*a))*log(c
os(b*x + a)^2 + sin(b*x + a)^2 + 2*cos(b*x + a) + 1) + (I*b*d*x + I*b*c + (
I*b*d*x + I*b*c)*cos(4*b*x + 4*a) + (-2*I*b*d*x - 2*I*b*c)*cos(2*b*x + 2*a)
 - (b*d*x + b*c)*sin(4*b*x + 4*a) + 2*(b*d*x + b*c)*sin(2*b*x + 2*a))*log(c
os(b*x + a)^2 + sin(b*x + a)^2 - 2*cos(b*x + a) + 1) - 4*(b*d*x + b*c - I*d
)*sin(3*b*x + 3*a) - 4*(b*d*x + b*c + I*d)*sin(b*x + a))/(-4*I*b^2*cos(4*b*
x + 4*a) + 8*I*b^2*cos(2*b*x + 2*a) + 4*b^2*sin(4*b*x + 4*a) - 8*b^2*sin(2*
b*x + 2*a) - 4*I*b^2)
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/sin(a + b*x)^3,x)
```

```
[Out] \text{Hanged}
```

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

$$\int (c + dx) \csc^3 (a + bx) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*csc(b*x+a)**3,x)
```

```
[Out] Integral((c + d*x)*csc(a + b*x)**3, x)
```

3.36 $\int \frac{\csc^3(a+bx)}{c+dx}\,dx$

Optimal. Leaf size=19

$$\text{Int}\left(\frac{\csc^3(a+bx)}{c+dx},x\right)$$

```
[Out] Unintegrable(csc(b*x+a)^3/(d*x+c),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc^3(a+bx)}{c+dx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[a + b*x]^3/(c + d*x),x]
```

```
[Out] Defer[Int][Csc[a + b*x]^3/(c + d*x), x]
```

Rubi steps

$$\int \frac{\csc^3(a+bx)}{c+dx}\,dx = \int \frac{\csc^3(a+bx)}{c+dx}\,dx$$

Mathematica [A] time = 32.34, size = 0, normalized size = 0.00

$$\int \frac{\csc^3(a+bx)}{c+dx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[a + b*x]^3/(c + d*x),x]
```

```
[Out] Integrate[Csc[a + b*x]^3/(c + d*x), x]
```

fricas [A] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\csc(bx+a)^3}{dx+c},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*x+c),x, algorithm="fricas")
```

```
[Out] integral(csc(b*x + a)^3/(d*x + c), x)
```

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

$$\int \frac{\csc(bx+a)^3}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*x+c),x, algorithm="giac")
```

```
[Out] integrate(csc(b*x + a)^3/(d*x + c), x)
```

maple [A] time = 2.90, size = 0, normalized size = 0.00

$$\int \frac{\csc^3(bx+a)}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^3/(d*x+c),x)
```

```
[Out] int(csc(b*x+a)^3/(d*x+c),x)
```

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

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*x+c),x, algorithm="maxima")
```

```
[Out] (((b*d*x + b*c)*cos(3*b*x + 3*a) + (b*d*x + b*c)*cos(b*x + a) - d*sin(3*b*x
 + 3*a) + d*sin(b*x + a))*cos(4*b*x + 4*a) + (b*d*x + b*c - 2*(b*d*x + b*c)
*cos(2*b*x + 2*a) - 2*d*sin(2*b*x + 2*a))*cos(3*b*x + 3*a) - 2*((b*d*x + b*
c)*cos(b*x + a) + d*sin(b*x + a))*cos(2*b*x + 2*a) + (b*d*x + b*c)*cos(b*x
+ a) + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 + (b^2*d^2*x^2 + 2*b^2*c*d*x +
b^2*c^2)*cos(4*b*x + 4*a)^2 + 4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(2
*b*x + 2*a)^2 + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*sin(4*b*x + 4*a)^2 -
4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*sin(4*b*x + 4*a)*sin(2*b*x + 2*a) +
 4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*sin(2*b*x + 2*a)^2 + 2*(b^2*d^2*x^
2 + 2*b^2*c*d*x + b^2*c^2 - 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(2*b
*x + 2*a))*cos(4*b*x + 4*a) - 4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(2
*b*x + 2*a))*integrate(1/2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 + 2*d^2)*si
n(b*x + a)/(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3 + (b^2*
d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(b*x + a)^2 + (b^2*
```

```
d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sin(b*x + a)^2 + 2*(b^
2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(b*x + a)), x) +
(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2
)*cos(4*b*x + 4*a)^2 + 4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(2*b*x +
2*a)^2 + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*sin(4*b*x + 4*a)^2 - 4*(b^2*
d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*sin(4*b*x + 4*a)*sin(2*b*x + 2*a) + 4*(b^2
*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*sin(2*b*x + 2*a)^2 + 2*(b^2*d^2*x^2 + 2*b
^2*c*d*x + b^2*c^2 - 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(2*b*x + 2*
a))*cos(4*b*x + 4*a) - 4*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(2*b*x +
2*a))*integrate(1/2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 + 2*d^2)*sin(b*x +
 a)/(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3 + (b^2*d^3*x^3
 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(b*x + a)^2 + (b^2*d^3*x^3
 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sin(b*x + a)^2 - 2*(b^2*d^3*x
^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(b*x + a)), x) + (d*cos(
3*b*x + 3*a) - d*cos(b*x + a) + (b*d*x + b*c)*sin(3*b*x + 3*a) + (b*d*x + b
*c)*sin(b*x + a))*sin(4*b*x + 4*a) + (2*d*cos(2*b*x + 2*a) - 2*(b*d*x + b*c
)*sin(2*b*x + 2*a) - d)*sin(3*b*x + 3*a) + 2*(d*cos(b*x + a) - (b*d*x + b*c
)*sin(b*x + a))*sin(2*b*x + 2*a) + d*sin(b*x + a))/(b^2*d^2*x^2 + 2*b^2*c*d
*x + b^2*c^2 + (b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(4*b*x + 4*a)^2 + 4
*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(2*b*x + 2*a)^2 + (b^2*d^2*x^2 +
2*b^2*c*d*x + b^2*c^2)*sin(4*b*x + 4*a)^2 - 4*(b^2*d^2*x^2 + 2*b^2*c*d*x +
b^2*c^2)*sin(4*b*x + 4*a)*sin(2*b*x + 2*a) + 4*(b^2*d^2*x^2 + 2*b^2*c*d*x +
 b^2*c^2)*sin(2*b*x + 2*a)^2 + 2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 - 2*(
b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(2*b*x + 2*a))*cos(4*b*x + 4*a) - 4
*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(2*b*x + 2*a))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{\sin (a+b\,x)^3\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^3*(c + d*x)),x)
```

```
[Out] int(1/(sin(a + b*x)^3*(c + d*x)), x)
```

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

$$\int \frac{\csc^3 (a+bx)}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**3/(d*x+c),x)
```

```
[Out] Integral(csc(a + b*x)**3/(c + d*x), x)
```

3.37 $\int \frac{\csc^3(a+bx)}{(c+dx)^2} dx$

Optimal. Leaf size=19

$$\mathrm{Int}\left(\frac{\csc^3(a+bx)}{(c+dx)^2},x\right)$$

```
[Out] Unintegrable(csc(b*x+a)^3/(d*x+c)^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc^3(a+bx)}{(c+dx)^2} dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[a + b*x]^3/(c + d*x)^2,x]
[Out] Defer[Int][Csc[a + b*x]^3/(c + d*x)^2, x]
```

Rubi steps

$$\int \frac{\csc^3(a+bx)}{(c+dx)^2} dx = \int \frac{\csc^3(a+bx)}{(c+dx)^2} dx$$

Mathematica [A] time = 35.64, size = 0, normalized size = 0.00

$$\int \frac{\csc^3(a+bx)}{(c+dx)^2} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[a + b*x]^3/(c + d*x)^2,x]
[Out] Integrate[Csc[a + b*x]^3/(c + d*x)^2, x]
```

fricas [A] time = 0.74, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\csc\left(bx+a\right)^3}{d^2x^2+2\,cdx+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] integral(csc(b*x + a)^3/(d^2*x^2 + 2*c*d*x + c^2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*x+c)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 4.46, size = 0, normalized size = 0.00

$$\int \frac{\csc^3(bx+a)}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)^3/(d*x+c)^2,x)
```

```
[Out] int(csc(b*x+a)^3/(d*x+c)^2,x)
```

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

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)^3/(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] (((b*d*x + b*c)*cos(3*b*x + 3*a) + (b*d*x + b*c)*cos(b*x + a) - 2*d*sin(3*b
*x + 3*a) + 2*d*sin(b*x + a))*cos(4*b*x + 4*a) + (b*d*x + b*c - 2*(b*d*x +
b*c)*cos(2*b*x + 2*a) - 4*d*sin(2*b*x + 2*a))*cos(3*b*x + 3*a) - 2*((b*d*x
+ b*c)*cos(b*x + a) + 2*d*sin(b*x + a))*cos(2*b*x + 2*a) + (b*d*x + b*c)*co
s(b*x + a) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3 + (b^
2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(4*b*x + 4*a)^2 +
 4*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(2*b*x + 2*
a)^2 + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sin(4*b*x
+ 4*a)^2 - 4*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sin(
4*b*x + 4*a)*sin(2*b*x + 2*a) + 4*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^
2*d*x + b^2*c^3)*sin(2*b*x + 2*a)^2 + 2*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*
b^2*c^2*d*x + b^2*c^3 - 2*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x +
b^2*c^3)*cos(2*b*x + 2*a))*cos(4*b*x + 4*a) - 4*(b^2*d^3*x^3 + 3*b^2*c*d^2*
x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(2*b*x + 2*a))*integrate(1/2*(b^2*d^2*x^2
 + 2*b^2*c*d*x + b^2*c^2 + 6*d^2)*sin(b*x + a)/(b^2*d^4*x^4 + 4*b^2*c*d^3*x
```

```
^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c^4 + (b^2*d^4*x^4 + 4*b^2*c*d
^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c^4)*cos(b*x + a)^2 + (b^2
*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c^4)*s
in(b*x + a)^2 + 2*(b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^
2*c^3*d*x + b^2*c^4)*cos(b*x + a)), x) + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3
*b^2*c^2*d*x + b^2*c^3 + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b
^2*c^3)*cos(4*b*x + 4*a)^2 + 4*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d
*x + b^2*c^3)*cos(2*b*x + 2*a)^2 + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c
^2*d*x + b^2*c^3)*sin(4*b*x + 4*a)^2 - 4*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3
*b^2*c^2*d*x + b^2*c^3)*sin(4*b*x + 4*a)*sin(2*b*x + 2*a) + 4*(b^2*d^3*x^3
+ 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sin(2*b*x + 2*a)^2 + 2*(b^2*d^
3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3 - 2*(b^2*d^3*x^3 + 3*b^2*
c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(2*b*x + 2*a))*cos(4*b*x + 4*a) - 4
*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(2*b*x + 2*a)
)*integrate(1/2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2 + 6*d^2)*sin(b*x + a)/
(b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c^
4 + (b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^
2*c^4)*cos(b*x + a)^2 + (b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2
+ 4*b^2*c^3*d*x + b^2*c^4)*sin(b*x + a)^2 - 2*(b^2*d^4*x^4 + 4*b^2*c*d^3*x^
3 + 6*b^2*c^2*d^2*x^2 + 4*b^2*c^3*d*x + b^2*c^4)*cos(b*x + a)), x) + (2*d*c
os(3*b*x + 3*a) - 2*d*cos(b*x + a) + (b*d*x + b*c)*sin(3*b*x + 3*a) + (b*d*
x + b*c)*sin(b*x + a))*sin(4*b*x + 4*a) + 2*(2*d*cos(2*b*x + 2*a) - (b*d*x
+ b*c)*sin(2*b*x + 2*a) - d)*sin(3*b*x + 3*a) + 2*(2*d*cos(b*x + a) - (b*d*
x + b*c)*sin(b*x + a))*sin(2*b*x + 2*a) + 2*d*sin(b*x + a))/(b^2*d^3*x^3 +
3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3 + (b^2*d^3*x^3 + 3*b^2*c*d^2*x^2
+ 3*b^2*c^2*d*x + b^2*c^3)*cos(4*b*x + 4*a)^2 + 4*(b^2*d^3*x^3 + 3*b^2*c*d^
2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(2*b*x + 2*a)^2 + (b^2*d^3*x^3 + 3*b^2*
c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sin(4*b*x + 4*a)^2 - 4*(b^2*d^3*x^3 +
3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sin(4*b*x + 4*a)*sin(2*b*x + 2*a
) + 4*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*sin(2*b*x +
 2*a)^2 + 2*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3 - 2*(b
^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^3)*cos(2*b*x + 2*a))*c
os(4*b*x + 4*a) - 4*(b^2*d^3*x^3 + 3*b^2*c*d^2*x^2 + 3*b^2*c^2*d*x + b^2*c^
3)*cos(2*b*x + 2*a))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{\sin(a+bx)^3 (c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)^3*(c + d*x)^2),x)
```

```
[Out] int(1/(sin(a + b*x)^3*(c + d*x)^2), x)
```

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

$$\int \frac{\csc^3(a+bx)}{(c+dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)**3/(d*x+c)**2,x)
```

```
[Out] Integral(csc(a + b*x)**3/(c + d*x)**2, x)
```

3.38 $\int (c+dx)^{5/2} \sin(a+bx)\,dx$

Optimal. Leaf size=195

$$-\frac{15\sqrt{\frac{\pi}{2}}\,d^{5/2}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{7/2}}+\frac{15\sqrt{\frac{\pi}{2}}\,d^{5/2}\sin\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{7/2}}+\frac{15d^2\sqrt{c+dx}\,\cos(a+bx)}{4b^3}+$$

```
[Out] -(d*x+c)^(5/2)*cos(b*x+a)/b+5/2*d*(d*x+c)^(3/2)*sin(b*x+a)/b^2-15/8*d^(5/2)
*cos(a-b*c/d)*FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1
/2)*Pi^(1/2)/b^(7/2)+15/8*d^(5/2)*FresnelS(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)
^(1/2)/d^(1/2))*sin(a-b*c/d)*2^(1/2)*Pi^(1/2)/b^(7/2)+15/4*d^2*cos(b*x+a)*(
d*x+c)^(1/2)/b^3
```

Rubi [A] time = 0.43, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {3296, 3306, 3305, 3351, 3304, 3352}

$$-\frac{15\sqrt{\frac{\pi}{2}}\,d^{5/2}\cos\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{7/2}}+\frac{15\sqrt{\frac{\pi}{2}}\,d^{5/2}\sin\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{7/2}}+\frac{15d^2\sqrt{c+dx}\,\cos(a}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^(5/2)*Sin[a + b*x],x]
```

```
[Out] (15*d^2*Sqrt[c + d*x]*Cos[a + b*x])/(4*b^3) - ((c + d*x)^(5/2)*Cos[a + b*x]
)/b - (15*d^(5/2)*Sqrt[Pi/2]*Cos[a - (b*c)/d]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*
Sqrt[c + d*x])/Sqrt[d]])/(4*b^(7/2)) + (15*d^(5/2)*Sqrt[Pi/2]*FresnelS[(Sqr
t[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[a - (b*c)/d])/(4*b^(7/2)) + (5*
d*(c + d*x)^(3/2)*Sin[a + b*x])/(2*b^2)
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (c+dx)^{5/2}\sin(a+bx)\,dx = -\frac{(c+dx)^{5/2}\cos(a+bx)}{b}+\frac{(5d)\int (c+dx)^{3/2}\cos(a+bx)\,dx}{2b}$$

$$= -\frac{(c+dx)^{5/2}\cos(a+bx)}{b}+\frac{5d(c+dx)^{3/2}\sin(a+bx)}{2b^2}-\frac{\left(15d^2\right)\int \sqrt{c+dx}\,\sin(a+b}{4b^2}$$

$$= \frac{15d^2\sqrt{c+dx}\,\cos(a+bx)}{4b^3}-\frac{(c+dx)^{5/2}\cos(a+bx)}{b}+\frac{5d(c+dx)^{3/2}\sin(a+bx)}{2b^2}-$$

$$= \frac{15d^2\sqrt{c+dx}\,\cos(a+bx)}{4b^3}-\frac{(c+dx)^{5/2}\cos(a+bx)}{b}+\frac{5d(c+dx)^{3/2}\sin(a+bx)}{2b^2}-$$

$$= \frac{15d^2\sqrt{c+dx}\,\cos(a+bx)}{4b^3}-\frac{(c+dx)^{5/2}\cos(a+bx)}{b}+\frac{5d(c+dx)^{3/2}\sin(a+bx)}{2b^2}-$$

$$= \frac{15d^2\sqrt{c+dx}\,\cos(a+bx)}{4b^3}-\frac{(c+dx)^{5/2}\cos(a+bx)}{b}-\frac{15d^{5/2}\sqrt{\frac{\pi}{2}}\,\cos\left(a-\frac{bc}{d}\right)C\left(\right.}{4b^{7/2}}$$

Mathematica [C] time = 0.12, size = 124, normalized size = 0.64

$$\frac{d^2\sqrt{c+dx}\,e^{-\frac{i(ad+bc)}{d}}\left(\frac{e^{2ia}\Gamma\left(\frac{7}{2},-\frac{ib(c+dx)}{d}\right)}{\sqrt{-\frac{ib(c+dx)}{d}}}+\frac{e^{\frac{2ibc}{d}}\Gamma\left(\frac{7}{2},\frac{ib(c+dx)}{d}\right)}{\sqrt{\frac{ib(c+dx)}{d}}}\right)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^(5/2)*Sin[a + b*x],x]
```

```
[Out] (d^2*Sqrt[c + d*x]*((E^((2*I)*a)*Gamma[7/2, ((-I)*b*(c + d*x))/d])/Sqrt[((-
I)*b*(c + d*x))/d] + (E^(((2*I)*b*c)/d)*Gamma[7/2, (I*b*(c + d*x))/d])/Sqrt
[(I*b*(c + d*x))/d]))/(2*b^3*E^((I*(b*c + a*d))/d))
```

fricas [A] time = 0.76, size = 190, normalized size = 0.97

$$-\frac{15\sqrt{2}\,\pi d^3\sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{bc-ad}{d}\right)\mathrm{C}\left(\sqrt{2}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)-15\sqrt{2}\,\pi d^3\sqrt{\frac{b}{\pi d}}\,\mathrm{S}\left(\sqrt{2}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)\sin\left(-\frac{bc-ad}{d}\right)+2\sqrt{d}}{8\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/8*(15*sqrt(2)*pi*d^3*sqrt(b/(pi*d))*cos(-(b*c - a*d)/d)*fresnel_cos(sqrt
(2)*sqrt(d*x + c)*sqrt(b/(pi*d))) - 15*sqrt(2)*pi*d^3*sqrt(b/(pi*d))*fresne
l_sin(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d)/d) + 2*sqrt(d*
x + c)*((4*b^3*d^2*x^2 + 8*b^3*c*d*x + 4*b^3*c^2 - 15*b*d^2)*cos(b*x + a) -
 10*(b^2*d^2*x + b^2*c*d)*sin(b*x + a)))/b^4
```

giac [C] time = 1.95, size = 1246, normalized size = 6.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sin(b*x+a),x, algorithm="giac")
```

```
[Out] -1/16*(8*(I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*
b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*
d^2) + 1)) - I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*
(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqr
t(b^2*d^2) + 1)))*c^3 + 6*c*d^2*((I*sqrt(2)*sqrt(pi)*(4*b^2*c^2 + 4*I*b*c*d
 - 3*d^2)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) +
 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b^2) - 2*
I*(2*I*(d*x + c)^(3/2)*b*d - 4*I*sqrt(d*x + c)*b*c*d + 3*sqrt(d*x + c)*d^2)
```

```
*e^((-I*(d*x + c)*b + I*b*c - I*a*d)/d)/b^2)/d^2 + (-I*sqrt(2)*sqrt(pi)*(4*
b^2*c^2 - 4*I*b*c*d - 3*d^2)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I
*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b
^2*d^2) + 1)*b^2) - 2*I*(2*I*(d*x + c)^(3/2)*b*d - 4*I*sqrt(d*x + c)*b*c*d
- 3*sqrt(d*x + c)*d^2)*e^((I*(d*x + c)*b - I*b*c + I*a*d)/d)/b^2)/d^2) + d^
3*((-I*sqrt(2)*sqrt(pi)*(8*b^3*c^3 + 12*I*b^2*c^2*d - 18*b*c*d^2 - 15*I*d^3
)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e
^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b^3) - 2*I*(4*I*(
d*x + c)^(5/2)*b^2*d - 12*I*(d*x + c)^(3/2)*b^2*c*d + 12*I*sqrt(d*x + c)*b^
2*c^2*d + 10*(d*x + c)^(3/2)*b*d^2 - 18*sqrt(d*x + c)*b*c*d^2 - 15*I*sqrt(d
*x + c)*d^3)*e^((-I*(d*x + c)*b + I*b*c - I*a*d)/d)/b^3)/d^3 + (I*sqrt(2)*s
qrt(pi)*(8*b^3*c^3 - 12*I*b^2*c^2*d - 18*b*c*d^2 + 15*I*d^3)*d*erf(-1/2*sqr
t(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a
*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b^3) - 2*I*(4*I*(d*x + c)^(5/2
)*b^2*d - 12*I*(d*x + c)^(3/2)*b^2*c*d + 12*I*sqrt(d*x + c)*b^2*c^2*d - 10*
(d*x + c)^(3/2)*b*d^2 + 18*sqrt(d*x + c)*b*c*d^2 - 15*I*sqrt(d*x + c)*d^3)*
e^((I*(d*x + c)*b - I*b*c + I*a*d)/d)/b^3)/d^3) + 12*(-I*sqrt(2)*sqrt(pi)*(
2*b*c + I*d)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2
) + 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b) + I
*sqrt(2)*sqrt(pi)*(2*b*c - I*d)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*
(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqr
t(b^2*d^2) + 1)*b) + 2*sqrt(d*x + c)*d*e^((I*(d*x + c)*b - I*b*c + I*a*d)/d
)/b + 2*sqrt(d*x + c)*d*e^((-I*(d*x + c)*b + I*b*c - I*a*d)/d)/b)*c^2)/d
```

maple [A] time = 0.02, size = 233, normalized size = 1.19

$$\frac{-\frac{d(dx+c)^{\frac{5}{2}}\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{b}+\frac{5d\left(\frac{d(dx+c)^{\frac{3}{2}}\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{2b}-\frac{3d\left(-\frac{d\sqrt{dx+c}\,\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{2b}+\frac{d\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)-\sin\left(\frac{da-}{d}\right.\right.}{4b\sqrt{\frac{b}{d}}}\right.}{2b}\right.}{b}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(5/2)*sin(b*x+a),x)
```

```
[Out] 2/d*(-1/2/b*d*(d*x+c)^(5/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)+5/2/b*d*(1/2/b*d
*(d*x+c)^(3/2)*sin(1/d*(d*x+c)*b+(a*d-b*c)/d)-3/2/b*d*(-1/2/b*d*(d*x+c)^(1/
```

```
2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)+1/4/b*d*2^(1/2)*Pi^(1/2)/(b/d)^(1/2)*(cos
((a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)-sin(
(a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d))))
```

maxima [C] time = 0.76, size = 261, normalized size = 1.34

$$\frac{\sqrt{2}\left(40\sqrt{2}\,(dx+c)^{\frac{3}{2}}b^2d\sin\left(\frac{(dx+c)b-bc+ad}{d}\right)-4\left(4\sqrt{2}\,(dx+c)^{\frac{5}{2}}b^3-15\sqrt{2}\,\sqrt{dx+c}\,bd^2\right)\cos\left(\frac{(dx+c)b-bc+ad}{d}\right)+\left((15\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sin(b*x+a),x, algorithm="maxima")
```

```
[Out] 1/32*sqrt(2)*(40*sqrt(2)*(d*x + c)^(3/2)*b^2*d*sin(((d*x + c)*b - b*c + a*d
)/d) - 4*(4*sqrt(2)*(d*x + c)^(5/2)*b^3 - 15*sqrt(2)*sqrt(d*x + c)*b*d^2)*c
os(((d*x + c)*b - b*c + a*d)/d) + ((15*I - 15)*sqrt(pi)*d^3*(b^2/d^2)^(1/4)
*cos(-(b*c - a*d)/d) + (15*I + 15)*sqrt(pi)*d^3*(b^2/d^2)^(1/4)*sin(-(b*c -
 a*d)/d))*erf(sqrt(d*x + c)*sqrt(I*b/d)) + (-(15*I + 15)*sqrt(pi)*d^3*(b^2/
d^2)^(1/4)*cos(-(b*c - a*d)/d) - (15*I - 15)*sqrt(pi)*d^3*(b^2/d^2)^(1/4)*s
in(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(-I*b/d)))/b^4
```

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

$$\int \sin\left(a+b\,x\right)\,{\left(c+d\,x\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(c + d*x)^(5/2),x)
```

```
[Out] int(sin(a + b*x)*(c + d*x)^(5/2), x)
```

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

$$\int (c+dx)^{\frac{5}{2}}\sin(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(5/2)*sin(b*x+a),x)
```

```
[Out] Integral((c + d*x)**(5/2)*sin(a + b*x), x)
```

3.39 $\int (c+dx)^{3/2}\sin(a+bx)\,dx$

Optimal. Leaf size=170

$$-\frac{3\sqrt{\frac{\pi}{2}}\,d^{3/2}\sin\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{2b^{5/2}}-\frac{3\sqrt{\frac{\pi}{2}}\,d^{3/2}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{2b^{5/2}}+\frac{3d\sqrt{c+dx}\,\sin(a+bx)}{2b^2}-\frac{(c+d}{}$$

```
[Out] -(d*x+c)^(3/2)*cos(b*x+a)/b-3/4*d^(3/2)*cos(a-b*c/d)*FresnelS(b^(1/2)*2^(1/
2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)-3/4*d^(3/2)*Fre
snelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*sin(a-b*c/d)*2^(1/2)*
Pi^(1/2)/b^(5/2)+3/2*d*sin(b*x+a)*(d*x+c)^(1/2)/b^2
```

Rubi [A] time = 0.24, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {3296, 3306, 3305, 3351, 3304, 3352}

$$-\frac{3\sqrt{\frac{\pi}{2}}\,d^{3/2}\sin\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{2b^{5/2}}-\frac{3\sqrt{\frac{\pi}{2}}\,d^{3/2}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{2b^{5/2}}+\frac{3d\sqrt{c+dx}\,\sin(a+bx)}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^(3/2)*Sin[a + b*x],x]
```

```
[Out] -(((c + d*x)^(3/2)*Cos[a + b*x])/b) - (3*d^(3/2)*Sqrt[Pi/2]*Cos[a - (b*c)/d
]*FresnelS[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]])/(2*b^(5/2)) - (3*d^
(3/2)*Sqrt[Pi/2]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[a
 - (b*c)/d])/(2*b^(5/2)) + (3*d*Sqrt[c + d*x]*Sin[a + b*x])/(2*b^2)
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (c+dx)^{3/2}\sin(a+bx)\,dx = -\frac{(c+dx)^{3/2}\cos(a+bx)}{b}+\frac{(3d)\int\sqrt{c+dx}\,\cos(a+bx)\,dx}{2b}$$

$$= -\frac{(c+dx)^{3/2}\cos(a+bx)}{b}+\frac{3d\sqrt{c+dx}\,\sin(a+bx)}{2b^2}-\frac{\left(3d^2\right)\int\frac{\sin(a+bx)}{\sqrt{c+dx}}\,dx}{4b^2}$$

$$= -\frac{(c+dx)^{3/2}\cos(a+bx)}{b}+\frac{3d\sqrt{c+dx}\,\sin(a+bx)}{2b^2}-\frac{\left(3d^2\cos\left(a-\frac{bc}{d}\right)\right)\int\frac{\sin\left(\frac{bc}{d}+b\right.}{\sqrt{c+dx}}}{4b^2}$$

$$= -\frac{(c+dx)^{3/2}\cos(a+bx)}{b}+\frac{3d\sqrt{c+dx}\,\sin(a+bx)}{2b^2}-\frac{\left(3d\cos\left(a-\frac{bc}{d}\right)\right)\text{Subst}\left(\int s\right.}{2b^2}$$

$$= -\frac{(c+dx)^{3/2}\cos(a+bx)}{b}-\frac{3d^{3/2}\sqrt{\frac{\pi}{2}}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{2b^{5/2}}-\frac{3d^{3/2}\sqrt{\frac{\pi}{2}}\,C\left(\right.}{}$$

Mathematica [C] time = 0.11, size = 125, normalized size = 0.74

$$-\frac{id\sqrt{c+dx}\,e^{-\frac{i(ad+bc)}{d}}\left(\frac{e^{2ia}\Gamma\left(\frac{5}{2},-\frac{ib(c+dx)}{d}\right)}{\sqrt{-\frac{ib(c+dx)}{d}}}-\frac{e^{\frac{2ibc}{d}}\Gamma\left(\frac{5}{2},\frac{ib(c+dx)}{d}\right)}{\sqrt{\frac{ib(c+dx)}{d}}}\right)}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^(3/2)*Sin[a + b*x],x]
```

```
[Out] ((-1/2*I)*d*Sqrt[c + d*x]*((E^((2*I)*a)*Gamma[5/2, ((-I)*b*(c + d*x))/d])/S
qrt[((-I)*b*(c + d*x))/d] - (E^(((2*I)*b*c)/d)*Gamma[5/2, (I*b*(c + d*x))/d
])/Sqrt[(I*b*(c + d*x))/d]))/(b^2*E^((I*(b*c + a*d))/d))
```

fricas [A] time = 0.64, size = 156, normalized size = 0.92

$$-\frac{3\sqrt{2}\,\pi d^2\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{bc-ad}{d}\right)\mathrm{S}\left(\sqrt{2}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)+3\sqrt{2}\,\pi d^2\sqrt{\frac{b}{\pi d}}\,\mathrm{C}\left(\sqrt{2}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)\sin\left(-\frac{bc-ad}{d}\right)-2\left(3\,bd\,s\right.}{4\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(3/2)*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/4*(3*sqrt(2)*pi*d^2*sqrt(b/(pi*d))*cos(-(b*c - a*d)/d)*fresnel_sin(sqrt(
2)*sqrt(d*x + c)*sqrt(b/(pi*d))) + 3*sqrt(2)*pi*d^2*sqrt(b/(pi*d))*fresnel_
cos(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d)/d) - 2*(3*b*d*si
n(b*x + a) - 2*(b^2*d*x + b^2*c)*cos(b*x + a))*sqrt(d*x + c))/b^3
```

giac [C] time = 2.18, size = 779, normalized size = 4.58

$$-\frac{4\left(\frac{i\sqrt{2}\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{bd}\sqrt{dx+c}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{2\,d}\right)e^{\left(\frac{i\,bc-i\,ad}{d}\right)}}{\sqrt{bd}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}-\frac{i\sqrt{2}\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{bd}\sqrt{dx+c}\left(-\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{2\,d}\right)e^{\left(\frac{-i\,bc+i\,ad}{d}\right)}}{\sqrt{bd}\left(-\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}\right)c^2+d^2\left(\frac{i\sqrt{2}\sqrt{\pi}\left(4\,b^2c^2+4i\,bcd-\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(3/2)*sin(b*x+a),x, algorithm="giac")
```

```
[Out] -1/8*(4*(I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b
*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d
^2) + 1)) - I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(
-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt
(b^2*d^2) + 1)))*c^2 + d^2*((I*sqrt(2)*sqrt(pi)*(4*b^2*c^2 + 4*I*b*c*d - 3*
d^2)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d
)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b^2) - 2*I*(2*
I*(d*x + c)^(3/2)*b*d - 4*I*sqrt(d*x + c)*b*c*d + 3*sqrt(d*x + c)*d^2)*e^((
```

```
-I*(d*x + c)*b + I*b*c - I*a*d)/d)/b^2)/d^2 + (-I*sqrt(2)*sqrt(pi)*(4*b^2*c
^2 - 4*I*b*c*d - 3*d^2)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/
sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^
2) + 1)*b^2) - 2*I*(2*I*(d*x + c)^(3/2)*b*d - 4*I*sqrt(d*x + c)*b*c*d - 3*s
qrt(d*x + c)*d^2)*e^((I*(d*x + c)*b - I*b*c + I*a*d)/d)/b^2)/d^2) + 4*(-I*s
qrt(2)*sqrt(pi)*(2*b*c + I*d)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I
*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2
*d^2) + 1)*b) + I*sqrt(2)*sqrt(pi)*(2*b*c - I*d)*d*erf(-1/2*sqrt(2)*sqrt(b*
d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt
(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b) + 2*sqrt(d*x + c)*d*e^((I*(d*x + c)*b -
 I*b*c + I*a*d)/d)/b + 2*sqrt(d*x + c)*d*e^((-I*(d*x + c)*b + I*b*c - I*a*d
)/d)/b)*c)/d
```

maple [A] time = 0.01, size = 188, normalized size = 1.11

$$\frac{-\frac{d(dx+c)^{\frac{3}{2}}\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{b}+\frac{3d\left(\frac{d\sqrt{dx+c}\,\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{2b}-\frac{d\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)+\sin\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{4b\sqrt{\frac{b}{d}}}\right)}{b}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(3/2)*sin(b*x+a),x)
```

```
[Out] 2/d*(-1/2/b*d*(d*x+c)^(3/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)+3/2/b*d*(1/2/b*d
*(d*x+c)^(1/2)*sin(1/d*(d*x+c)*b+(a*d-b*c)/d)-1/4/b*d*2^(1/2)*Pi^(1/2)/(b/d
)^(1/2)*(cos((a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/
2)*b/d)+sin((a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2
)*b/d))))
```

maxima [C] time = 1.76, size = 242, normalized size = 1.42

$$-\frac{\sqrt{2}\left(8\sqrt{2}\,(dx+c)^{\frac{3}{2}}b^2\cos\left(\frac{(dx+c)b-bc+ad}{d}\right)-12\sqrt{2}\,\sqrt{dx+c}\,bd\sin\left(\frac{(dx+c)b-bc+ad}{d}\right)-\left(-(3i+3)\,\sqrt{\pi}\,d^2\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\cos\left(\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(3/2)*sin(b*x+a),x, algorithm="maxima")
```

```
[Out] -1/16*sqrt(2)*(8*sqrt(2)*(d*x + c)^(3/2)*b^2*cos(((d*x + c)*b - b*c + a*d)/
d) - 12*sqrt(2)*sqrt(d*x + c)*b*d*sin(((d*x + c)*b - b*c + a*d)/d) - (-(3*I
 + 3)*sqrt(pi)*d^2*(b^2/d^2)^(1/4)*cos(-(b*c - a*d)/d) + (3*I - 3)*sqrt(pi)
```

```
*d^2*(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(I*b/d)) -
((3*I - 3)*sqrt(pi)*d^2*(b^2/d^2)^(1/4)*cos(-(b*c - a*d)/d) - (3*I + 3)*sqr
t(pi)*d^2*(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(-I*b/
d)))/b^3
```

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

$$\int \sin(a+b\,x)\,\left(c+d\,x\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(c + d*x)^(3/2),x)
```

```
[Out] int(sin(a + b*x)*(c + d*x)^(3/2), x)
```

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

$$\int (c+dx)^{\frac{3}{2}}\sin(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(3/2)*sin(b*x+a),x)
```

```
[Out] Integral((c + d*x)**(3/2)*sin(a + b*x), x)
```

3.40 $\int \sqrt{c+dx}\,\sin(a+bx)\,dx$

Optimal. Leaf size=142

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{d}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{b^{3/2}}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{d}\sin\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{b^{3/2}}-\frac{\sqrt{c+dx}\cos(a+bx)}{b}$$

```
[Out] 1/2*cos(a-b*c/d)*FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*d
^(1/2)*2^(1/2)*Pi^(1/2)/b^(3/2)-1/2*FresnelS(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+
c)^(1/2)/d^(1/2))*sin(a-b*c/d)*d^(1/2)*2^(1/2)*Pi^(1/2)/b^(3/2)-cos(b*x+a)*
(d*x+c)^(1/2)/b
```

Rubi [A] time = 0.18, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {3296, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{d}\cos\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{b^{3/2}}-\frac{\sqrt{\frac{\pi}{2}}\sqrt{d}\sin\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{b^{3/2}}-\frac{\sqrt{c+dx}\cos(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c + d*x]*Sin[a + b*x],x]
```

```
[Out] -((Sqrt[c + d*x]*Cos[a + b*x])/b) + (Sqrt[d]*Sqrt[Pi/2]*Cos[a - (b*c)/d]*Fr
esnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]])/b^(3/2) - (Sqrt[d]*Sqrt
[Pi/2]*FresnelS[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[a - (b*c)/d
])/b^(3/2)
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \sqrt{c+dx}\,\sin(a+bx)\,dx = -\frac{\sqrt{c+dx}\,\cos(a+bx)}{b}+\frac{d\int\frac{\cos(a+bx)}{\sqrt{c+dx}}\,dx}{2b}$$

$$= -\frac{\sqrt{c+dx}\,\cos(a+bx)}{b}+\frac{\left(d\cos\left(a-\frac{bc}{d}\right)\right)\int\frac{\cos\left(\frac{bc}{d}+bx\right)}{\sqrt{c+dx}}\,dx}{2b}-\frac{\left(d\sin\left(a-\frac{bc}{d}\right)\right)\int\frac{\sin\left(\frac{bc}{d}+\right.}{\sqrt{c+d}}}{2b}$$

$$= -\frac{\sqrt{c+dx}\,\cos(a+bx)}{b}+\frac{\cos\left(a-\frac{bc}{d}\right)\text{Subst}\left(\int\cos\left(\frac{bx^2}{d}\right)dx,x,\sqrt{c+dx}\right)}{b}-\frac{\sin\left(a-\right.}{}$$

$$= -\frac{\sqrt{c+dx}\,\cos(a+bx)}{b}+\frac{\sqrt{d}\sqrt{\frac{\pi}{2}}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{b^{3/2}}-\frac{\sqrt{d}\sqrt{\frac{\pi}{2}}S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}}{\sqrt{d}}\right.}{b^{3}}$$

Mathematica [C] time = 0.10, size = 123, normalized size = 0.87

$$\frac{\sqrt{c+dx}\,e^{-\frac{i(ad+bc)}{d}}\left(-\frac{e^{2ia}\Gamma\left(\frac{3}{2},-\frac{ib(c+dx)}{d}\right)}{\sqrt{-\frac{ib(c+dx)}{d}}}-\frac{e^{\frac{2ibc}{d}}\Gamma\left(\frac{3}{2},\frac{ib(c+dx)}{d}\right)}{\sqrt{\frac{ib(c+dx)}{d}}}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c + d*x]*Sin[a + b*x],x]
```

```
[Out] (Sqrt[c + d*x]*(-((E^((2*I)*a)*Gamma[3/2, ((-I)*b*(c + d*x))/d])/Sqrt[((-I)
*b*(c + d*x))/d]) - (E^(((2*I)*b*c)/d)*Gamma[3/2, (I*b*(c + d*x))/d])/Sqrt[
(I*b*(c + d*x))/d]))/(2*b*E^((I*(b*c + a*d))/d))
```

fricas [A] time = 0.68, size = 127, normalized size = 0.89

$$\frac{\sqrt{2}\,\pi d\sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{bc-ad}{d}\right)\mathrm{C}\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right)-\sqrt{2}\,\pi d\sqrt{\frac{b}{\pi d}}\,\mathrm{S}\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right)\sin\left(-\frac{bc-ad}{d}\right)-2\,\sqrt{dx+c}\,b\,\mathrm{c}}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(1/2)*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*pi*d*sqrt(b/(pi*d))*cos(-(b*c - a*d)/d)*fresnel_cos(sqrt(2)*sq
rt(d*x + c)*sqrt(b/(pi*d))) - sqrt(2)*pi*d*sqrt(b/(pi*d))*fresnel_sin(sqrt(
2)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d)/d) - 2*sqrt(d*x + c)*b*co
s(b*x + a))/b^2
```

giac [C] time = 0.62, size = 426, normalized size = 3.00

$$-\frac{-\frac{i\,\sqrt{2}\,\sqrt{\pi}\,(2\,bc+i\,d)d\,\mathrm{erf}\left(-\frac{\sqrt{2}\,\sqrt{bd}\,\sqrt{dx+c}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{2\,d}\right)e^{\left(\frac{i\,bc-i\,ad}{d}\right)}}{\sqrt{bd}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)b}+\frac{i\,\sqrt{2}\,\sqrt{\pi}\,(2\,bc-i\,d)d\,\mathrm{erf}\left(-\frac{\sqrt{2}\,\sqrt{bd}\,\sqrt{dx+c}\left(-\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{2\,d}\right)e^{\left(\frac{-i\,bc+i\,ad}{d}\right)}}{\sqrt{bd}\left(-\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)b}+2\left(\frac{i\,\sqrt{2}\,\sqrt{}\cdots}{\cdots}\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(1/2)*sin(b*x+a),x, algorithm="giac")
```

```
[Out] -1/4*(-I*sqrt(2)*sqrt(pi)*(2*b*c + I*d)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d
*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*
d/sqrt(b^2*d^2) + 1)*b) + I*sqrt(2)*sqrt(pi)*(2*b*c - I*d)*d*erf(-1/2*sqrt(
2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d
)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b) + 2*(I*sqrt(2)*sqrt(pi)*d*erf
(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*
c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)) - I*sqrt(2)*sqrt(pi)*d*
erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((
-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)))*c + 2*sqrt(d*x +
 c)*d*e^((I*(d*x + c)*b - I*b*c + I*a*d)/d)/b + 2*sqrt(d*x + c)*d*e^((-I*(d
*x + c)*b + I*b*c - I*a*d)/d)/b)/d
```

maple [A] time = 0.01, size = 145, normalized size = 1.02

$$\frac{-\frac{d\sqrt{dx+c}\,\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{b}+\frac{d\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)-\sin\left(\frac{da-cb}{d}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{2b\sqrt{\frac{b}{d}}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(1/2)*sin(b*x+a),x)
```

```
[Out] 2/d*(-1/2/b*d*(d*x+c)^(1/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)+1/4/b*d*2^(1/2)*
Pi^(1/2)/(b/d)^(1/2)*(cos((a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2
)*(d*x+c)^(1/2)*b/d)-sin((a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)
*(d*x+c)^(1/2)*b/d)))
```

maxima [C] time = 1.38, size = 196, normalized size = 1.38

$$-\frac{\sqrt{2}\left(4\sqrt{2}\sqrt{dx+c}\,b\cos\left(\frac{(dx+c)b-bc+ad}{d}\right)+\left((i-1)\sqrt{\pi}\,d\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\cos\left(-\frac{bc-ad}{d}\right)+(i+1)\sqrt{\pi}\,d\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\sin\left(-\frac{bc-ad}{d}\right)\right)\mathrm{erf}}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(1/2)*sin(b*x+a),x, algorithm="maxima")
```

```
[Out] -1/8*sqrt(2)*(4*sqrt(2)*sqrt(d*x + c)*b*cos(((d*x + c)*b - b*c + a*d)/d) +
((I - 1)*sqrt(pi)*d*(b^2/d^2)^(1/4)*cos(-(b*c - a*d)/d) + (I + 1)*sqrt(pi)*
d*(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(I*b/d)) + (-(
I + 1)*sqrt(pi)*d*(b^2/d^2)^(1/4)*cos(-(b*c - a*d)/d) - (I - 1)*sqrt(pi)*d*
(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(-I*b/d)))/b^2
```

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

$$\int \sin(a+b\,x)\,\sqrt{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(c + d*x)^(1/2),x)
```

```
[Out] int(sin(a + b*x)*(c + d*x)^(1/2), x)
```

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

$$\int \sqrt{c+dx}\,\sin(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(1/2)*sin(b*x+a),x)
```

```
[Out] Integral(sqrt(c + d*x)*sin(a + b*x), x)
```

3.41 $\int \frac{\sin(a+bx)}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=117

$$\frac{\sqrt{2\pi}\,\sin\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{\sqrt{b}\sqrt{d}}+\frac{\sqrt{2\pi}\,\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{\sqrt{b}\sqrt{d}}$$

```
[Out] cos(a-b*c/d)*FresnelS(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/
2)*Pi^(1/2)/b^(1/2)/d^(1/2)+FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)
/d^(1/2))*sin(a-b*c/d)*2^(1/2)*Pi^(1/2)/b^(1/2)/d^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{2\pi}\,\sin\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{\sqrt{b}\sqrt{d}}+\frac{\sqrt{2\pi}\,\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]/Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[2*Pi]*Cos[a - (b*c)/d]*FresnelS[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sq
rt[d]])/(Sqrt[b]*Sqrt[d]) + (Sqrt[2*Pi]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c
 + d*x])/Sqrt[d]]*Sin[a - (b*c)/d])/(Sqrt[b]*Sqrt[d])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
```

```
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin(a+bx)}{\sqrt{c+dx}}\,dx = \cos\left(a-\frac{bc}{d}\right)\int \frac{\sin\left(\frac{bc}{d}+bx\right)}{\sqrt{c+dx}}\,dx + \sin\left(a-\frac{bc}{d}\right)\int \frac{\cos\left(\frac{bc}{d}+bx\right)}{\sqrt{c+dx}}\,dx$$

$$= \frac{\left(2\cos\left(a-\frac{bc}{d}\right)\right)\text{Subst}\left(\int \sin\left(\frac{bx^2}{d}\right)\,dx, x, \sqrt{c+dx}\right)}{d} + \frac{\left(2\sin\left(a-\frac{bc}{d}\right)\right)\text{Subst}\left(\int \cos\left(\frac{bx^2}{d}\right)\,d\right.}{d}$$

$$= \frac{\sqrt{2\pi}\,\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\,\sqrt{\frac{2}{\pi}}\,\sqrt{c+dx}}{\sqrt{d}}\right)}{\sqrt{b}\,\sqrt{d}} + \frac{\sqrt{2\pi}\,C\left(\frac{\sqrt{b}\,\sqrt{\frac{2}{\pi}}\,\sqrt{c+dx}}{\sqrt{d}}\right)\sin\left(a-\frac{bc}{d}\right)}{\sqrt{b}\,\sqrt{d}}$$

Mathematica [C] time = 0.06, size = 121, normalized size = 1.03

$$-\frac{e^{-\frac{i(ad+bc)}{d}}\left(e^{2ia}\sqrt{-\frac{ib(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},-\frac{ib(c+dx)}{d}\right)+e^{\frac{2ibc}{d}}\sqrt{\frac{ib(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},\frac{ib(c+dx)}{d}\right)\right)}{2b\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]/Sqrt[c + d*x],x]
```

```
[Out] -1/2*(E^((2*I)*a)*Sqrt[((-I)*b*(c + d*x))/d]*Gamma[1/2, ((-I)*b*(c + d*x))/
d] + E^(((2*I)*b*c)/d)*Sqrt[(I*b*(c + d*x))/d]*Gamma[1/2, (I*b*(c + d*x))/d
])/(b*E^((I*(b*c + a*d))/d)*Sqrt[c + d*x])
```

fricas [A] time = 0.82, size = 107, normalized size = 0.91

$$\frac{\sqrt{2}\,\pi\sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{bc-ad}{d}\right)S\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right)+\sqrt{2}\,\pi\sqrt{\frac{b}{\pi d}}\,C\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right)\sin\left(-\frac{bc-ad}{d}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] (sqrt(2)*pi*sqrt(b/(pi*d))*cos(-(b*c - a*d)/d)*fresnel_sin(sqrt(2)*sqrt(d*x
 + c)*sqrt(b/(pi*d))) + sqrt(2)*pi*sqrt(b/(pi*d))*fresnel_cos(sqrt(2)*sqrt(
d*x + c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d)/d))/b
```

giac [C] time = 0.47, size = 168, normalized size = 1.44

$$-\frac{\frac{i\sqrt{2}\sqrt{\pi}d\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{bd}\sqrt{dx+c}\left(\frac{ibd}{\sqrt{b^2d^2}}+1\right)}{2d}\right)e^{\left(\frac{ibc-iad}{d}\right)}}{\sqrt{bd}\left(\frac{ibd}{\sqrt{b^2d^2}}+1\right)}-\frac{i\sqrt{2}\sqrt{\pi}d\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{bd}\sqrt{dx+c}\left(-\frac{ibd}{\sqrt{b^2d^2}}+1\right)}{2d}\right)e^{\left(\frac{-ibc+iad}{d}\right)}}{\sqrt{bd}\left(-\frac{ibd}{\sqrt{b^2d^2}}+1\right)}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*(I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/
sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2)
 + 1)) - I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*
b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^
2*d^2) + 1)))/d
```

maple [A] time = 0.01, size = 99, normalized size = 0.85

$$\frac{\sqrt{2}\,\sqrt{\pi}\,\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)+\sin\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{d\sqrt{\frac{b}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)/(d*x+c)^(1/2),x)
```

```
[Out] 1/d*2^(1/2)*Pi^(1/2)/(b/d)^(1/2)*(cos((a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2
)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)+sin((a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)
/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d))
```

maxima [C] time = 0.85, size = 159, normalized size = 1.36

$$-\frac{\sqrt{2}\left(\left(\left(-(i+1)\,\sqrt{\pi}\,\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\cos\left(-\frac{bc-ad}{d}\right)+(i-1)\,\sqrt{\pi}\,\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\sin\left(-\frac{bc-ad}{d}\right)\right)\mathrm{erf}\left(\sqrt{dx+c}\sqrt{\frac{ib}{d}}\right)+\left((i-1)\,\sqrt{\pi}\,\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\right.\right.\right.}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/4*sqrt(2)*((-(I + 1)*sqrt(pi)*(b^2/d^2)^(1/4)*cos(-(b*c - a*d)/d) + (I -
 1)*sqrt(pi)*(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(I*
b/d)) + ((I - 1)*sqrt(pi)*(b^2/d^2)^(1/4)*cos(-(b*c - a*d)/d) - (I + 1)*sqr
t(pi)*(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(-I*b/d)))
/b
```

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

$$\int \frac{\sin(a+b\,x)}{\sqrt{c+d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)/(c + d*x)^(1/2),x)
```

```
[Out] int(sin(a + b*x)/(c + d*x)^(1/2), x)
```

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

$$\int \frac{\sin(a+bx)}{\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)**(1/2),x)
```

```
[Out] Integral(sin(a + b*x)/sqrt(c + d*x), x)
```

3.42 $\int \frac{\sin(a+bx)}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=139

$$\frac{2\sqrt{2\pi}\sqrt{b}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sqrt{2\pi}\sqrt{b}\sin\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sin(a+bx)}{d\sqrt{c+dx}}$$

```
[Out] 2*cos(a-b*c/d)*FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*b^(
1/2)*2^(1/2)*Pi^(1/2)/d^(3/2)-2*FresnelS(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(
1/2)/d^(1/2))*sin(a-b*c/d)*b^(1/2)*2^(1/2)*Pi^(1/2)/d^(3/2)-2*sin(b*x+a)/d/
(d*x+c)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {3297, 3306, 3305, 3351, 3304, 3352}

$$\frac{2\sqrt{2\pi}\sqrt{b}\cos\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sqrt{2\pi}\sqrt{b}\sin\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sin(a+bx)}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]/(c + d*x)^(3/2),x]
```

```
[Out] (2*Sqrt[b]*Sqrt[2*Pi]*Cos[a - (b*c)/d]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c
+ d*x])/Sqrt[d]])/d^(3/2) - (2*Sqrt[b]*Sqrt[2*Pi]*FresnelS[(Sqrt[b]*Sqrt[2/
Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[a - (b*c)/d])/d^(3/2) - (2*Sin[a + b*x])/(d
*Sqrt[c + d*x])
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin(a+bx)}{(c+dx)^{3/2}}\,dx = -\frac{2\sin(a+bx)}{d\sqrt{c+dx}} + \frac{(2b)\int \frac{\cos(a+bx)}{\sqrt{c+dx}}\,dx}{d}$$

$$= -\frac{2\sin(a+bx)}{d\sqrt{c+dx}} + \frac{\left(2b\cos\left(a-\frac{bc}{d}\right)\right)\int \frac{\cos\left(\frac{bc}{d}+bx\right)}{\sqrt{c+dx}}\,dx}{d} - \frac{\left(2b\sin\left(a-\frac{bc}{d}\right)\right)\int \frac{\sin\left(\frac{bc}{d}+bx\right)}{\sqrt{c+dx}}\,dx}{d}$$

$$= -\frac{2\sin(a+bx)}{d\sqrt{c+dx}} + \frac{\left(4b\cos\left(a-\frac{bc}{d}\right)\right)\text{Subst}\left(\int \cos\left(\frac{bx^2}{d}\right)dx, x, \sqrt{c+dx}\right)}{d^2} - \frac{\left(4b\sin\left(a-\frac{bc}{d}\right)\right)$$

$$= \frac{2\sqrt{b}\sqrt{2\pi}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}} - \frac{2\sqrt{b}\sqrt{2\pi}\,S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)\sin\left(a-\frac{bc}{d}\right)}{d^{3/2}} - \frac{2\sin(a}{d\sqrt{c}$$

Mathematica [C] time = 0.34, size = 148, normalized size = 1.06

$$\frac{ie^{-\frac{i(ad+bc)}{d}}\left(2ie^{\frac{i(ad+bc)}{d}}\sin(a+bx)-e^{2ia}\sqrt{-\frac{ib(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},-\frac{ib(c+dx)}{d}\right)+e^{\frac{2ibc}{d}}\sqrt{\frac{ib(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},\frac{ib(c+dx)}{d}\right)\right)}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]/(c + d*x)^(3/2),x]
```

```
[Out] (I*(-(E^((2*I)*a)*Sqrt[((-I)*b*(c + d*x))/d]*Gamma[1/2, ((-I)*b*(c + d*x))/
d]) + E^(((2*I)*b*c)/d)*Sqrt[(I*b*(c + d*x))/d]*Gamma[1/2, (I*b*(c + d*x))/
d] + (2*I)*E^((I*(b*c + a*d))/d)*Sin[a + b*x]))/(d*E^((I*(b*c + a*d))/d)*Sq
rt[c + d*x])
```

fricas [A] time = 0.69, size = 146, normalized size = 1.05

$$\frac{2\left(\sqrt{2}\,(\pi dx+\pi c)\sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{bc-ad}{d}\right)\mathrm{C}\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right)-\sqrt{2}\,(\pi dx+\pi c)\sqrt{\frac{b}{\pi d}}\,\mathrm{S}\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right)\sin\left(-\frac{bc-ad}{d}\right.\right.}{d^2x+cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*(sqrt(2)*(pi*d*x + pi*c)*sqrt(b/(pi*d))*cos(-(b*c - a*d)/d)*fresnel_cos(s
qrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d))) - sqrt(2)*(pi*d*x + pi*c)*sqrt(b/(pi*d
))*fresnel_sin(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d)/d) -
sqrt(d*x + c)*sin(b*x + a))/(d^2*x + c*d)
```

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

$$\int \frac{\sin(bx+a)}{(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)/(d*x + c)^(3/2), x)
```

maple [A] time = 0.01, size = 140, normalized size = 1.01

$$\frac{-\frac{2\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{\sqrt{dx+c}}+\frac{2b\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)-\sin\left(\frac{da-cb}{d}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{d\sqrt{\frac{b}{d}}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)/(d*x+c)^(3/2),x)
```

```
[Out] 2/d*(-1/(d*x+c)^(1/2)*sin(1/d*(d*x+c)*b+(a*d-b*c)/d)+b/d*2^(1/2)*Pi^(1/2)/(
b/d)^(1/2)*(cos((a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^
(1/2)*b/d)-sin((a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(
1/2)*b/d)))
```

maxima [C] time = 1.52, size = 129, normalized size = 0.93

$$-\frac{\left(\left((i-1)\ \sqrt{2}\,\Gamma\left(-\frac{1}{2},\frac{i\,(dx+c)b}{d}\right)-(i+1)\ \sqrt{2}\,\Gamma\left(-\frac{1}{2},-\frac{i\,(dx+c)b}{d}\right)\right)\cos\left(-\frac{bc-ad}{d}\right)+\left((i+1)\ \sqrt{2}\,\Gamma\left(-\frac{1}{2},\frac{i\,(dx+c)b}{d}\right)-(i-1)\right.}{4\,\sqrt{dx+c}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/4*(((I - 1)*sqrt(2)*gamma(-1/2, I*(d*x + c)*b/d) - (I + 1)*sqrt(2)*gamma
(-1/2, -I*(d*x + c)*b/d))*cos(-(b*c - a*d)/d) + ((I + 1)*sqrt(2)*gamma(-1/2
, I*(d*x + c)*b/d) - (I - 1)*sqrt(2)*gamma(-1/2, -I*(d*x + c)*b/d))*sin(-(b
*c - a*d)/d))*sqrt((d*x + c)*b/d)/(sqrt(d*x + c)*d)
```

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

$$\int \frac{\sin\left(a+b\,x\right)}{{\left(c+d\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)/(c + d*x)^(3/2),x)
```

```
[Out] int(sin(a + b*x)/(c + d*x)^(3/2), x)
```

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

$$\int \frac{\sin\left(a+bx\right)}{\left(c+dx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)**(3/2),x)
```

```
[Out] Integral(sin(a + b*x)/(c + d*x)**(3/2), x)
```

3.43 $\int \frac{\sin(a+bx)}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=168

$$-\frac{4\sqrt{2\pi}\,b^{3/2}\sin\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{4\sqrt{2\pi}\,b^{3/2}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{4b\cos(a+bx)}{3d^2\sqrt{c+dx}}-\frac{2\sin(a+bx)}{3d(c+dx)^{3/2}}$$

```
[Out] -2/3*sin(b*x+a)/d/(d*x+c)^(3/2)-4/3*b^(3/2)*cos(a-b*c/d)*FresnelS(b^(1/2)*2
^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/d^(5/2)-4/3*b^(3/2)
*FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*sin(a-b*c/d)*2^(1
/2)*Pi^(1/2)/d^(5/2)-4/3*b*cos(b*x+a)/d^2/(d*x+c)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {3297, 3306, 3305, 3351, 3304, 3352}

$$-\frac{4\sqrt{2\pi}\,b^{3/2}\sin\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{4\sqrt{2\pi}\,b^{3/2}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{4b\cos(a+bx)}{3d^2\sqrt{c+dx}}-\frac{2\sin(a+bx)}{3d(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]/(c + d*x)^(5/2),x]
```

```
[Out] (-4*b*Cos[a + b*x])/(3*d^2*Sqrt[c + d*x]) - (4*b^(3/2)*Sqrt[2*Pi]*Cos[a - (
b*c)/d]*FresnelS[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]])/(3*d^(5/2)) -
 (4*b^(3/2)*Sqrt[2*Pi]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]]
*Sin[a - (b*c)/d])/(3*d^(5/2)) - (2*Sin[a + b*x])/(3*d*(c + d*x)^(3/2))
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin(a+bx)}{(c+dx)^{5/2}}\,dx = -\frac{2\sin(a+bx)}{3d(c+dx)^{3/2}} + \frac{(2b)\int \frac{\cos(a+bx)}{(c+dx)^{3/2}}\,dx}{3d}$$

$$= -\frac{4b\cos(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sin(a+bx)}{3d(c+dx)^{3/2}} - \frac{\left(4b^2\right)\int \frac{\sin(a+bx)}{\sqrt{c+dx}}\,dx}{3d^2}$$

$$= -\frac{4b\cos(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sin(a+bx)}{3d(c+dx)^{3/2}} - \frac{\left(4b^2\cos\left(a-\frac{bc}{d}\right)\right)\int \frac{\sin\left(\frac{bc}{d}+bx\right)}{\sqrt{c+dx}}\,dx}{3d^2} - \frac{\left(4b^2\sin\left(a-\frac{bc}{d}\right)\right)\int}{3d^2}$$

$$= -\frac{4b\cos(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sin(a+bx)}{3d(c+dx)^{3/2}} - \frac{\left(8b^2\cos\left(a-\frac{bc}{d}\right)\right)\text{Subst}\left(\int \sin\left(\frac{bx^2}{d}\right)\,dx, x, \sqrt{c+dx}\right)}{3d^3} -$$

$$= -\frac{4b\cos(a+bx)}{3d^2\sqrt{c+dx}} - \frac{4b^{3/2}\sqrt{2\pi}\,\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{3d^{5/2}} - \frac{4b^{3/2}\sqrt{2\pi}\,C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)\text{sin}}{3d^{5/2}}$$

Mathematica [C] time = 0.64, size = 162, normalized size = 0.96

$$\frac{2\left(-d\sin(a+bx)-b(c+dx)\left(e^{-i(a+bx)}\left(e^{2i(a+bx)}-e^{\frac{ib(c+dx)}{d}}\sqrt{\frac{ib(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},\frac{ib(c+dx)}{d}\right)+1\right)-e^{i\left(a-\frac{bc}{d}\right)}\sqrt{-\frac{ib(c+dx)}{d}}\,\Gamma\left(\frac{1}{2},-\frac{ib(c+dx)}{d}\right)\right)\right)}{3d^2(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]/(c + d*x)^(5/2),x]
```

```
[Out] (2*(-(b*(c + d*x)*(-(E^(I*(a - (b*c)/d))*Sqrt[((-I)*b*(c + d*x))/d]*Gamma[1
/2, ((-I)*b*(c + d*x))/d]) + (1 + E^((2*I)*(a + b*x)) - E^((I*b*(c + d*x))/
d)*Sqrt[(I*b*(c + d*x))/d]*Gamma[1/2, (I*b*(c + d*x))/d])/E^(I*(a + b*x))))
 - d*Sin[a + b*x]))/(3*d^2*(c + d*x)^(3/2))
```

fricas [A] time = 0.71, size = 208, normalized size = 1.24

$$-\frac{2\left(2\sqrt{2}\left(\pi bd^2x^2+2\,\pi bcdx+\pi bc^2\right)\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{bc-ad}{d}\right)S\left(\sqrt{2}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)+2\sqrt{2}\left(\pi bd^2x^2+2\,\pi bcdx+\pi bc^2\right)\cdots}{3\left(d^4x^2+2\,cd^3x+c^2\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(2*sqrt(2)*(pi*b*d^2*x^2 + 2*pi*b*c*d*x + pi*b*c^2)*sqrt(b/(pi*d))*cos
(-(b*c - a*d)/d)*fresnel_sin(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d))) + 2*sqrt
(2)*(pi*b*d^2*x^2 + 2*pi*b*c*d*x + pi*b*c^2)*sqrt(b/(pi*d))*fresnel_cos(sqr
t(2)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d)/d) + sqrt(d*x + c)*(2*(
b*d*x + b*c)*cos(b*x + a) + d*sin(b*x + a)))/(d^4*x^2 + 2*c*d^3*x + c^2*d^2
)
```

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

$$\int \frac{\sin(bx+a)}{(dx+c)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)/(d*x + c)^(5/2), x)
```

maple [A] time = 0.01, size = 180, normalized size = 1.07

$$\frac{-\frac{2\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{3(dx+c)^{\frac{3}{2}}}+\frac{4b\left(-\frac{\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{\sqrt{dx+c}}-\frac{b\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)+\sin\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{d\sqrt{\frac{b}{d}}}\right)}{3d}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)/(d*x+c)^(5/2),x)
```

```
[Out] 2/d*(-1/3/(d*x+c)^(3/2)*sin(1/d*(d*x+c)*b+(a*d-b*c)/d)+2/3*b/d*(-1/(d*x+c)^
(1/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)-b/d*2^(1/2)*Pi^(1/2)/(b/d)^(1/2)*(cos(
(a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)+sin((
a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d))))
```

maxima [C] time = 1.96, size = 129, normalized size = 0.77

$$-\frac{\left(\left(-(i+1)\ \sqrt{2}\,\Gamma\left(-\frac{3}{2},\frac{i\,(dx+c)b}{d}\right)+(i-1)\ \sqrt{2}\,\Gamma\left(-\frac{3}{2},-\frac{i\,(dx+c)b}{d}\right)\right)\cos\left(-\frac{bc-ad}{d}\right)+\left((i-1)\ \sqrt{2}\,\Gamma\left(-\frac{3}{2},\frac{i\,(dx+c)b}{d}\right)-(i+\right.\right.}{4\,(dx+c)^{\frac{3}{2}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/4*((-(I + 1)*sqrt(2)*gamma(-3/2, I*(d*x + c)*b/d) + (I - 1)*sqrt(2)*gamm
a(-3/2, -I*(d*x + c)*b/d))*cos(-(b*c - a*d)/d) + ((I - 1)*sqrt(2)*gamma(-3/
2, I*(d*x + c)*b/d) - (I + 1)*sqrt(2)*gamma(-3/2, -I*(d*x + c)*b/d))*sin(-(
b*c - a*d)/d))*((d*x + c)*b/d)^(3/2)/((d*x + c)^(3/2)*d)
```

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

$$\int \frac{\sin(a+b\,x)}{(c+d\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)/(c + d*x)^(5/2),x)
```

```
[Out] int(sin(a + b*x)/(c + d*x)^(5/2), x)
```

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

$$\int \frac{\sin(a+bx)}{(c+dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)**(5/2),x)
```

```
[Out] Integral(sin(a + b*x)/(c + d*x)**(5/2), x)
```

3.44 $\int \frac{\sin(a+bx)}{(c+dx)^{7/2}}\,dx$

Optimal. Leaf size=193

$$-\frac{8\sqrt{2\pi}\,b^{5/2}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}+\frac{8\sqrt{2\pi}\,b^{5/2}\sin\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}+\frac{8b^2\sin(a+bx)}{15d^3\sqrt{c+dx}}-\frac{4b\cos(a+}{15d^2(c+d}$$

```
[Out] -4/15*b*cos(b*x+a)/d^2/(d*x+c)^(3/2)-2/5*sin(b*x+a)/d/(d*x+c)^(5/2)-8/15*b^
(5/2)*cos(a-b*c/d)*FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))
*2^(1/2)*Pi^(1/2)/d^(7/2)+8/15*b^(5/2)*FresnelS(b^(1/2)*2^(1/2)/Pi^(1/2)*(d
*x+c)^(1/2)/d^(1/2))*sin(a-b*c/d)*2^(1/2)*Pi^(1/2)/d^(7/2)+8/15*b^2*sin(b*x
+a)/d^3/(d*x+c)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {3297, 3306, 3305, 3351, 3304, 3352}

$$-\frac{8\sqrt{2\pi}\,b^{5/2}\cos\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}+\frac{8\sqrt{2\pi}\,b^{5/2}\sin\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}}+\frac{8b^2\sin(a+bx)}{15d^3\sqrt{c+dx}}-\frac{4b}{15}$$

Antiderivative was successfully verified.

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

```
[Out] (-4*b*Cos[a + b*x])/(15*d^2*(c + d*x)^(3/2)) - (8*b^(5/2)*Sqrt[2*Pi]*Cos[a
- (b*c)/d]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]])/(15*d^(7/2
)) + (8*b^(5/2)*Sqrt[2*Pi]*FresnelS[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt
[d]]*Sin[a - (b*c)/d])/(15*d^(7/2)) - (2*Sin[a + b*x])/(5*d*(c + d*x)^(5/2)
) + (8*b^2*Sin[a + b*x])/(15*d^3*Sqrt[c + d*x])
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
```

```
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin(a+bx)}{(c+dx)^{7/2}}\,dx = -\frac{2\sin(a+bx)}{5d(c+dx)^{5/2}} + \frac{(2b)\int \frac{\cos(a+bx)}{(c+dx)^{5/2}}\,dx}{5d}$$

$$= -\frac{4b\cos(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sin(a+bx)}{5d(c+dx)^{5/2}} - \frac{\left(4b^2\right)\int \frac{\sin(a+bx)}{(c+dx)^{3/2}}\,dx}{15d^2}$$

$$= -\frac{4b\cos(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sin(a+bx)}{5d(c+dx)^{5/2}} + \frac{8b^2\sin(a+bx)}{15d^3\sqrt{c+dx}} - \frac{\left(8b^3\right)\int \frac{\cos(a+bx)}{\sqrt{c+dx}}\,dx}{15d^3}$$

$$= -\frac{4b\cos(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sin(a+bx)}{5d(c+dx)^{5/2}} + \frac{8b^2\sin(a+bx)}{15d^3\sqrt{c+dx}} - \frac{\left(8b^3\cos\left(a-\frac{bc}{d}\right)\right)\int \frac{\cos\left(\frac{bc}{d}+bx\right)}{\sqrt{c+dx}}\,dx}{15d^3} + \cdots$$

$$= -\frac{4b\cos(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sin(a+bx)}{5d(c+dx)^{5/2}} + \frac{8b^2\sin(a+bx)}{15d^3\sqrt{c+dx}} - \frac{\left(16b^3\cos\left(a-\frac{bc}{d}\right)\right)\text{Subst}\left(\int \cos\left(\frac{bx^2}{d}\cdots\right.\right.}{15d^4}$$

$$= -\frac{4b\cos(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{8b^{5/2}\sqrt{2\pi}\,\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{15d^{7/2}} + \frac{8b^{5/2}\sqrt{2\pi}\,S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)\sin\cdots}{15d^{7/2}}$$

Mathematica [C] time = 0.50, size = 208, normalized size = 1.08

$$-\frac{i\left(b(c+dx)\left(2e^{i\left(a-\frac{bc}{d}\right)}\left(e^{\frac{ib(c+dx)}{d}}(2b(c+dx)-id)-2id\left(-\frac{ib(c+dx)}{d}\right)^{3/2}\Gamma\left(\frac{1}{2},-\frac{ib(c+dx)}{d}\right)\right)-ie^{-i(a+bx)}\left(-4ib(c+dx)+\cdots\right.\right.}{15d^3(c+dx)^{5/2}}$$

Antiderivative was successfully verified.

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

```
[Out] ((-1/15*I)*(b*(c + d*x)*(2*E^(I*(a - (b*c)/d))*(E^((I*b*(c + d*x))/d)*((-I)
*d + 2*b*(c + d*x)) - (2*I)*d*(((-I)*b*(c + d*x))/d)^(3/2)*Gamma[1/2, ((-I)
*b*(c + d*x))/d]) - (I*(2*d - (4*I)*b*(c + d*x) + 4*d*E^((I*b*(c + d*x))/d)
*((I*b*(c + d*x))/d)^(3/2)*Gamma[1/2, (I*b*(c + d*x))/d]))/E^(I*(a + b*x)))
 - (6*I)*d^2*Sin[a + b*x]))/(d^3*(c + d*x)^(5/2))
```

fricas [A] time = 0.83, size = 297, normalized size = 1.54

$$-\frac{2\left(4\sqrt{2}\left(\pi b^2d^3x^3+3\pi b^2cd^2x^2+3\pi b^2c^2dx+\pi b^2c^3\right)\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{bc-ad}{d}\right)C\left(\sqrt{2}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)-4\sqrt{2}\left(\pi b^2d^3x\cdots\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(4*sqrt(2)*(pi*b^2*d^3*x^3 + 3*pi*b^2*c*d^2*x^2 + 3*pi*b^2*c^2*d*x +
pi*b^2*c^3)*sqrt(b/(pi*d))*cos(-(b*c - a*d)/d)*fresnel_cos(sqrt(2)*sqrt(d*x
 + c)*sqrt(b/(pi*d))) - 4*sqrt(2)*(pi*b^2*d^3*x^3 + 3*pi*b^2*c*d^2*x^2 + 3*
pi*b^2*c^2*d*x + pi*b^2*c^3)*sqrt(b/(pi*d))*fresnel_sin(sqrt(2)*sqrt(d*x +
c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d)/d) + sqrt(d*x + c)*(2*(b*d^2*x + b*c*d)
*cos(b*x + a) - (4*b^2*d^2*x^2 + 8*b^2*c*d*x + 4*b^2*c^2 - 3*d^2)*sin(b*x +
 a)))/(d^6*x^3 + 3*c*d^5*x^2 + 3*c^2*d^4*x + c^3*d^3)
```

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

$$\int \frac{\sin(bx+a)}{(dx+c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)/(d*x + c)^(7/2), x)
```

maple [A] time = 0.01, size = 220, normalized size = 1.14

$$\frac{-\frac{2\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{5(dx+c)^{\frac{5}{2}}}+\frac{4b\left(-\frac{\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{3(dx+c)^{\frac{3}{2}}}-\frac{2b\left(-\frac{\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{\sqrt{dx+c}}+\frac{b\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)-\sin\left(\frac{da-cb}{d}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{d\sqrt{\frac{b}{d}}}\right)}{3d}\right)}{5d}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)/(d*x+c)^(7/2),x)
```

```
[Out] 2/d*(-1/5/(d*x+c)^(5/2)*sin(1/d*(d*x+c)*b+(a*d-b*c)/d)+2/5*b/d*(-1/3/(d*x+c
)^(3/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)-2/3*b/d*(-1/(d*x+c)^(1/2)*sin(1/d*(d
*x+c)*b+(a*d-b*c)/d)+b/d*2^(1/2)*Pi^(1/2)/(b/d)^(1/2)*(cos((a*d-b*c)/d)*Fre
```

```
snelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)-sin((a*d-b*c)/d)*Fres
nelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d))))
```

maxima [C] time = 1.06, size = 129, normalized size = 0.67

$$\frac{\left(\left((i-1)\sqrt{2}\,\Gamma\left(-\frac{5}{2},\frac{i(dx+c)b}{d}\right)-(i+1)\sqrt{2}\,\Gamma\left(-\frac{5}{2},-\frac{i(dx+c)b}{d}\right)\right)\cos\left(-\frac{bc-ad}{d}\right)+\left((i+1)\sqrt{2}\,\Gamma\left(-\frac{5}{2},\frac{i(dx+c)b}{d}\right)-(i-1)\cdots\right.\right.}{4\,(dx+c)^{\frac{5}{2}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)^(7/2),x, algorithm="maxima")
```

```
[Out] 1/4*(((I - 1)*sqrt(2)*gamma(-5/2, I*(d*x + c)*b/d) - (I + 1)*sqrt(2)*gamma(
-5/2, -I*(d*x + c)*b/d))*cos(-(b*c - a*d)/d) + ((I + 1)*sqrt(2)*gamma(-5/2,
 I*(d*x + c)*b/d) - (I - 1)*sqrt(2)*gamma(-5/2, -I*(d*x + c)*b/d))*sin(-(b*
c - a*d)/d))*((d*x + c)*b/d)^(5/2)/((d*x + c)^(5/2)*d)
```

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

$$\int \frac{\sin(a+b\,x)}{(c+d\,x)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)/(c + d*x)^(7/2),x)
```

```
[Out] int(sin(a + b*x)/(c + d*x)^(7/2), x)
```

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

$$\int \frac{\sin(a+bx)}{(c+dx)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)/(d*x+c)**(7/2),x)
```

```
[Out] Integral(sin(a + b*x)/(c + d*x)**(7/2), x)
```

3.45 $\int (c+dx)^{5/2}\sin^2(a+bx)\,dx$

Optimal. Leaf size=231

$$-\frac{15\sqrt{\pi}\,d^{5/2}\sin\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{128b^{7/2}}-\frac{15\sqrt{\pi}\,d^{5/2}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{128b^{7/2}}+\frac{15d^2\sqrt{c+dx}\,\sin(2a+2bx)}{64b^3}+$$

```
[Out] -5/16*d*(d*x+c)^(3/2)/b^2+1/7*(d*x+c)^(7/2)/d-1/2*(d*x+c)^(5/2)*cos(b*x+a)*
sin(b*x+a)/b+5/8*d*(d*x+c)^(3/2)*sin(b*x+a)^2/b^2-15/128*d^(5/2)*cos(2*a-2*
b*c/d)*FresnelS(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/2)/Pi^(1/2))*Pi^(1/2)/b^(7/2)-
15/128*d^(5/2)*FresnelC(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/2)/Pi^(1/2))*sin(2*a-2
*b*c/d)*Pi^(1/2)/b^(7/2)+15/64*d^2*sin(2*b*x+2*a)*(d*x+c)^(1/2)/b^3
```

Rubi [A] time = 0.44, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {3311, 32, 3312, 3296, 3306, 3305, 3351, 3304, 3352}

$$-\frac{15\sqrt{\pi}\,d^{5/2}\sin\left(2a-\frac{2bc}{d}\right)\text{FresnelC}\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{\pi}\,\sqrt{d}}\right)}{128b^{7/2}}-\frac{15\sqrt{\pi}\,d^{5/2}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{128b^{7/2}}+\frac{15d^2\sqrt{c+dx}\,\sin(2a+}{64b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^(5/2)*Sin[a + b*x]^2,x]
```

```
[Out] (-5*d*(c + d*x)^(3/2))/(16*b^2) + (c + d*x)^(7/2)/(7*d) - (15*d^(5/2)*Sqrt[
Pi]*Cos[2*a - (2*b*c)/d]*FresnelS[(2*Sqrt[b]*Sqrt[c + d*x])/(Sqrt[d]*Sqrt[P
i])])/(128*b^(7/2)) - (15*d^(5/2)*Sqrt[Pi]*FresnelC[(2*Sqrt[b]*Sqrt[c + d*x
])/(Sqrt[d]*Sqrt[Pi])]*Sin[2*a - (2*b*c)/d])/(128*b^(7/2)) - ((c + d*x)^(5/
2)*Cos[a + b*x]*Sin[a + b*x])/(2*b) + (5*d*(c + d*x)^(3/2)*Sin[a + b*x]^2)/
(8*b^2) + (15*d^2*Sqrt[c + d*x]*Sin[2*a + 2*b*x])/(64*b^3)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (c+dx)^{5/2}\sin^2(a+bx)\,dx = -\frac{(c+dx)^{5/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{5d(c+dx)^{3/2}\sin^2(a+bx)}{8b^2} + \frac{1}{2}\int (c+dx)^{5}$$

$$= \frac{(c+dx)^{7/2}}{7d} - \frac{(c+dx)^{5/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{5d(c+dx)^{3/2}\sin^2(a+bx)}{8b^2} - \frac{(1}{}$$

$$= -\frac{5d(c+dx)^{3/2}}{16b^2} + \frac{(c+dx)^{7/2}}{7d} - \frac{(c+dx)^{5/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{5d(c+dx)^{3/2}}{8}$$

$$= -\frac{5d(c+dx)^{3/2}}{16b^2} + \frac{(c+dx)^{7/2}}{7d} - \frac{(c+dx)^{5/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{5d(c+dx)^{3/2}}{8}$$

$$= -\frac{5d(c+dx)^{3/2}}{16b^2} + \frac{(c+dx)^{7/2}}{7d} - \frac{(c+dx)^{5/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{5d(c+dx)^{3/2}}{8}$$

$$= -\frac{5d(c+dx)^{3/2}}{16b^2} + \frac{(c+dx)^{7/2}}{7d} - \frac{(c+dx)^{5/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{5d(c+dx)^{3/2}}{8}$$

$$= -\frac{5d(c+dx)^{3/2}}{16b^2} + \frac{(c+dx)^{7/2}}{7d} - \frac{15d^{5/2}\sqrt{\pi}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{128b^{7/2}} - \frac{15d^{5/2}\sqrt{}}{}$$

Mathematica [A] time = 2.32, size = 194, normalized size = 0.84

$$\frac{\sqrt{\frac{b}{d}}\left(2\sqrt{\frac{b}{d}}\sqrt{c+dx}\left(-7d\sin(2(a+bx))\left(16b^2(c+dx)^2-15d^2\right)-140bd^2(c+dx)\cos(2(a+bx))+64b^3(c+dx)^3\right)\right.}{896b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^(5/2)*Sin[a + b*x]^2,x]
```

```
[Out] (Sqrt[b/d]*(-105*d^3*Sqrt[Pi]*Cos[2*a - (2*b*c)/d]*FresnelS[(2*Sqrt[b/d]*Sq
rt[c + d*x])/Sqrt[Pi]] - 105*d^3*Sqrt[Pi]*FresnelC[(2*Sqrt[b/d]*Sqrt[c + d*
x])/Sqrt[Pi]]*Sin[2*a - (2*b*c)/d] + 2*Sqrt[b/d]*Sqrt[c + d*x]*(64*b^3*(c +
 d*x)^3 - 140*b*d^2*(c + d*x)*Cos[2*(a + b*x)] - 7*d*(-15*d^2 + 16*b^2*(c +
 d*x)^2)*Sin[2*(a + b*x)])))/(896*b^4)
```

fricas [A] time = 0.73, size = 258, normalized size = 1.12

$$-\frac{105\,\pi d^4\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{2(bc-ad)}{d}\right)S\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)+105\,\pi d^4\sqrt{\frac{b}{\pi d}}\,C\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)\sin\left(-\frac{2(bc-ad)}{d}\right)-4\left(32\,b^4d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/896*(105*pi*d^4*sqrt(b/(pi*d))*cos(-2*(b*c - a*d)/d)*fresnel_sin(2*sqrt(
d*x + c)*sqrt(b/(pi*d))) + 105*pi*d^4*sqrt(b/(pi*d))*fresnel_cos(2*sqrt(d*x
 + c)*sqrt(b/(pi*d)))*sin(-2*(b*c - a*d)/d) - 4*(32*b^4*d^3*x^3 + 96*b^4*c*
d^2*x^2 + 32*b^4*c^3 + 70*b^2*c*d^2 - 140*(b^2*d^3*x + b^2*c*d^2)*cos(b*x +
 a)^2 - 7*(16*b^3*d^3*x^2 + 32*b^3*c*d^2*x + 16*b^3*c^2*d - 15*b*d^3)*cos(b
*x + a)*sin(b*x + a) + 2*(48*b^4*c^2*d + 35*b^2*d^3)*x)*sqrt(d*x + c))/(b^4
*d)
```

giac [C] time = 1.16, size = 1310, normalized size = 5.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/8960*(2240*(sqrt(pi)*d*erf(-sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2)
+ 1)/d)*e^((2*I*b*c - 2*I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)) + s
qrt(pi)*d*erf(-sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-2
*I*b*c + 2*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)) + 4*sqrt(d*x +
c))*c^3 + 28*c*d^2*(64*(3*(d*x + c)^(5/2) - 10*(d*x + c)^(3/2)*c + 15*sqrt(
d*x + c)*c^2)/d^2 + 15*(sqrt(pi)*(16*b^2*c^2 + 8*I*b*c*d - 3*d^2)*d*erf(-sq
rt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((2*I*b*c - 2*I*a*d)/d
)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b^2) - 2*(4*I*(d*x + c)^(3/2)*b*d -
8*I*sqrt(d*x + c)*b*c*d + 3*sqrt(d*x + c)*d^2)*e^((-2*I*(d*x + c)*b + 2*I*b
*c - 2*I*a*d)/d)/b^2)/d^2 + 15*(sqrt(pi)*(16*b^2*c^2 - 8*I*b*c*d - 3*d^2)*d
*erf(-sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-2*I*b*c +
2*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b^2) - 2*(-4*I*(d*x + c)^
(3/2)*b*d + 8*I*sqrt(d*x + c)*b*c*d + 3*sqrt(d*x + c)*d^2)*e^((2*I*(d*x + c
)*b - 2*I*b*c + 2*I*a*d)/d)/b^2)/d^2) + d^3*(256*(5*(d*x + c)^(7/2) - 21*(d
*x + c)^(5/2)*c + 35*(d*x + c)^(3/2)*c^2 - 35*sqrt(d*x + c)*c^3)/d^3 - 35*(
sqrt(pi)*(64*b^3*c^3 + 48*I*b^2*c^2*d - 36*b*c*d^2 - 15*I*d^3)*d*erf(-sqrt(
b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((2*I*b*c - 2*I*a*d)/d)/(
sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b^3) + 2*(16*I*(d*x + c)^(5/2)*b^2*d -
48*I*(d*x + c)^(3/2)*b^2*c*d + 48*I*sqrt(d*x + c)*b^2*c^2*d + 20*(d*x + c)^
(3/2)*b*d^2 - 36*sqrt(d*x + c)*b*c*d^2 - 15*I*sqrt(d*x + c)*d^3)*e^((-2*I*(
d*x + c)*b + 2*I*b*c - 2*I*a*d)/d)/b^3)/d^3 - 35*(sqrt(pi)*(64*b^3*c^3 - 48
*I*b^2*c^2*d - 36*b*c*d^2 + 15*I*d^3)*d*erf(-sqrt(b*d)*sqrt(d*x + c)*(-I*b*
d/sqrt(b^2*d^2) + 1)/d)*e^((-2*I*b*c + 2*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(
b^2*d^2) + 1)*b^3) + 2*(-16*I*(d*x + c)^(5/2)*b^2*d + 48*I*(d*x + c)^(3/2)*
b^2*c*d - 48*I*sqrt(d*x + c)*b^2*c^2*d + 20*(d*x + c)^(3/2)*b*d^2 - 36*sqrt
(d*x + c)*b*c*d^2 + 15*I*sqrt(d*x + c)*d^3)*e^((2*I*(d*x + c)*b - 2*I*b*c +
```

```
 2*I*a*d)/d)/b^3)/d^3) - 560*(3*sqrt(pi)*(4*b*c + I*d)*d*erf(-sqrt(b*d)*sqr
t(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((2*I*b*c - 2*I*a*d)/d)/(sqrt(b*d
)*(I*b*d/sqrt(b^2*d^2) + 1)*b) + 3*sqrt(pi)*(4*b*c - I*d)*d*erf(-sqrt(b*d)*
sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-2*I*b*c + 2*I*a*d)/d)/(sqr
t(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b) - 16*(d*x + c)^(3/2) + 48*sqrt(d*x + c
)*c - 6*I*sqrt(d*x + c)*d*e^((2*I*(d*x + c)*b - 2*I*b*c + 2*I*a*d)/d)/b + 6
*I*sqrt(d*x + c)*d*e^((-2*I*(d*x + c)*b + 2*I*b*c - 2*I*a*d)/d)/b)*c^2)/d
```

maple [A] time = 0.04, size = 242, normalized size = 1.05

$$\frac{\frac{(dx+c)^{\frac{7}{2}}}{7}-\frac{d(dx+c)^{\frac{5}{2}}\sin\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{4b}+\frac{5d\left(-\frac{d(dx+c)^{\frac{3}{2}}\cos\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{4b}+\frac{3d\left(\frac{d\sqrt{dx+c}\,\sin\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{4b}-\frac{d\sqrt{\pi}\left(\cos\left(\frac{2da-2cb}{d}\right)S\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\sqrt{\frac{b}{d}}\,d}\right)\cdots\right)}{\cdots}\right)}{4b}\right)}{4b}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(5/2)*sin(b*x+a)^2,x)
```

```
[Out] 2/d*(1/14*(d*x+c)^(7/2)-1/8/b*d*(d*x+c)^(5/2)*sin(2/d*(d*x+c)*b+2*(a*d-b*c)
/d)+5/8/b*d*(-1/4/b*d*(d*x+c)^(3/2)*cos(2/d*(d*x+c)*b+2*(a*d-b*c)/d)+3/4/b*
d*(1/4/b*d*(d*x+c)^(1/2)*sin(2/d*(d*x+c)*b+2*(a*d-b*c)/d)-1/8/b*d*Pi^(1/2)/
(b/d)^(1/2)*(cos(2*(a*d-b*c)/d)*FresnelS(2/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/
2)*b/d)+sin(2*(a*d-b*c)/d)*FresnelC(2/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/
d)))))
```

maxima [C] time = 1.48, size = 295, normalized size = 1.28

$$\frac{\sqrt{2}\left(\frac{512\sqrt{2}\,(dx+c)^{\frac{7}{2}}b^4}{d}-1120\sqrt{2}\,(dx+c)^{\frac{3}{2}}b^2d\cos\left(\frac{2\left((dx+c)b-bc+ad\right)}{d}\right)-\left((105i+105)\cdot 4^{\frac{1}{4}}\sqrt{\pi}\,d^3\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\cos\left(-\frac{2\,(bc-ad)}{d}\right)\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/7168*sqrt(2)*(512*sqrt(2)*(d*x + c)^(7/2)*b^4/d - 1120*sqrt(2)*(d*x + c)^
(3/2)*b^2*d*cos(2*((d*x + c)*b - b*c + a*d)/d) - ((105*I + 105)*4^(1/4)*sqr
```

```
t(pi)*d^3*(b^2/d^2)^(1/4)*cos(-2*(b*c - a*d)/d) - (105*I - 105)*4^(1/4)*sqr
t(pi)*d^3*(b^2/d^2)^(1/4)*sin(-2*(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(2*I
*b/d)) - (-(105*I - 105)*4^(1/4)*sqrt(pi)*d^3*(b^2/d^2)^(1/4)*cos(-2*(b*c -
 a*d)/d) + (105*I + 105)*4^(1/4)*sqrt(pi)*d^3*(b^2/d^2)^(1/4)*sin(-2*(b*c -
 a*d)/d))*erf(sqrt(d*x + c)*sqrt(-2*I*b/d)) - 56*(16*sqrt(2)*(d*x + c)^(5/2
)*b^3 - 15*sqrt(2)*sqrt(d*x + c)*b*d^2)*sin(2*((d*x + c)*b - b*c + a*d)/d))
/b^4
```

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

$$\int \sin(a + b\,x)^2\,(c + d\,x)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(c + d*x)^(5/2),x)
```

```
[Out] int(sin(a + b*x)^2*(c + d*x)^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(5/2)*sin(b*x+a)**2,x)
```

```
[Out] Timed out
```

3.46 $\int (c+dx)^{3/2}\sin^2(a+bx)\,dx$

Optimal. Leaf size=203

$$\frac{3\sqrt{\pi}\,d^{3/2}\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{32b^{5/2}}-\frac{3\sqrt{\pi}\,d^{3/2}\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{32b^{5/2}}+\frac{3d\sqrt{c+dx}\,\sin^2(a+bx)}{8b^2}-\frac{(c+dx)}{}$$

```
[Out] 1/5*(d*x+c)^(5/2)/d-1/2*(d*x+c)^(3/2)*cos(b*x+a)*sin(b*x+a)/b+3/32*d^(3/2)*
cos(2*a-2*b*c/d)*FresnelC(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/2)/Pi^(1/2))*Pi^(1/2
)/b^(5/2)-3/32*d^(3/2)*FresnelS(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/2)/Pi^(1/2))*s
in(2*a-2*b*c/d)*Pi^(1/2)/b^(5/2)-3/16*d*(d*x+c)^(1/2)/b^2+3/8*d*sin(b*x+a)^
2*(d*x+c)^(1/2)/b^2
```

Rubi [A] time = 0.36, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {3311, 32, 3312, 3306, 3305, 3351, 3304, 3352}

$$\frac{3\sqrt{\pi}\,d^{3/2}\cos\left(2a-\frac{2bc}{d}\right)\text{FresnelC}\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{\pi}\,\sqrt{d}}\right)}{32b^{5/2}}-\frac{3\sqrt{\pi}\,d^{3/2}\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{32b^{5/2}}+\frac{3d\sqrt{c+dx}\,\sin^2(a+bx)}{8b^2}-$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^(3/2)*Sin[a + b*x]^2,x]
```

```
[Out] (-3*d*Sqrt[c + d*x])/(16*b^2) + (c + d*x)^(5/2)/(5*d) + (3*d^(3/2)*Sqrt[Pi]
*Cos[2*a - (2*b*c)/d]*FresnelC[(2*Sqrt[b]*Sqrt[c + d*x])/(Sqrt[d]*Sqrt[Pi])
])/(32*b^(5/2)) - (3*d^(3/2)*Sqrt[Pi]*FresnelS[(2*Sqrt[b]*Sqrt[c + d*x])/(S
qrt[d]*Sqrt[Pi])]*Sin[2*a - (2*b*c)/d])/(32*b^(5/2)) - ((c + d*x)^(3/2)*Cos
[a + b*x]*Sin[a + b*x])/(2*b) + (3*d*Sqrt[c + d*x]*Sin[a + b*x]^2)/(8*b^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (c+dx)^{3/2}\sin^2(a+bx)\,dx = -\frac{(c+dx)^{3/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{3d\sqrt{c+dx}\,\sin^2(a+bx)}{8b^2} + \frac{1}{2}\int (c+dx)^{3/2}$$

$$= \frac{(c+dx)^{5/2}}{5d} - \frac{(c+dx)^{3/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{3d\sqrt{c+dx}\,\sin^2(a+bx)}{8b^2} - \frac{(3d}{}$$

$$= -\frac{3d\sqrt{c+dx}}{16b^2} + \frac{(c+dx)^{5/2}}{5d} - \frac{(c+dx)^{3/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{3d\sqrt{c+dx}\,\sin}{8b^2}$$

$$= -\frac{3d\sqrt{c+dx}}{16b^2} + \frac{(c+dx)^{5/2}}{5d} - \frac{(c+dx)^{3/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{3d\sqrt{c+dx}\,\sin}{8b^2}$$

$$= -\frac{3d\sqrt{c+dx}}{16b^2} + \frac{(c+dx)^{5/2}}{5d} - \frac{(c+dx)^{3/2}\cos(a+bx)\sin(a+bx)}{2b} + \frac{3d\sqrt{c+dx}\,\sin}{8b^2}$$

$$= -\frac{3d\sqrt{c+dx}}{16b^2} + \frac{(c+dx)^{5/2}}{5d} + \frac{3d^{3/2}\sqrt{\pi}\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{32b^{5/2}} - \frac{3d^{3/2}\sqrt{\pi}\,S}{}$$

Mathematica [A] time = 1.79, size = 175, normalized size = 0.86

$$\frac{\sqrt{\frac{b}{d}}\left(15\sqrt{\pi}\,d^2\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{\frac{b}{d}}\sqrt{c+dx}}{\sqrt{\pi}}\right)-15\sqrt{\pi}\,d^2\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{\frac{b}{d}}\sqrt{c+dx}}{\sqrt{\pi}}\right)+2\sqrt{\frac{b}{d}}\sqrt{c+dx}\left(4b(c+dx)(\right.\right.}{160b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^(3/2)*Sin[a + b*x]^2,x]
```

```
[Out] (Sqrt[b/d]*(15*d^2*Sqrt[Pi]*Cos[2*a - (2*b*c)/d]*FresnelC[(2*Sqrt[b/d]*Sqrt
[c + d*x])/Sqrt[Pi]] - 15*d^2*Sqrt[Pi]*FresnelS[(2*Sqrt[b/d]*Sqrt[c + d*x])
/Sqrt[Pi]]*Sin[2*a - (2*b*c)/d] + 2*Sqrt[b/d]*Sqrt[c + d*x]*(-15*d^2*Cos[2*
(a + b*x)] + 4*b*(c + d*x)*(4*b*(c + d*x) - 5*d*Sin[2*(a + b*x)]))))/(160*b
^3)
```

fricas [A] time = 0.65, size = 195, normalized size = 0.96

$$\frac{15\,\pi d^3\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{2\,(bc-ad)}{d}\right)\mathrm{C}\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)-15\,\pi d^3\sqrt{\frac{b}{\pi d}}\,\mathrm{S}\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)\sin\left(-\frac{2\,(bc-ad)}{d}\right)+2\left(16\,b^3d^2x^2\right.}{160\,b^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(3/2)*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/160*(15*pi*d^3*sqrt(b/(pi*d))*cos(-2*(b*c - a*d)/d)*fresnel_cos(2*sqrt(d*
x + c)*sqrt(b/(pi*d))) - 15*pi*d^3*sqrt(b/(pi*d))*fresnel_sin(2*sqrt(d*x +
c)*sqrt(b/(pi*d)))*sin(-2*(b*c - a*d)/d) + 2*(16*b^3*d^2*x^2 + 32*b^3*c*d*x
 + 16*b^3*c^2 - 30*b*d^2*cos(b*x + a)^2 + 15*b*d^2 - 40*(b^2*d^2*x + b^2*c*
d)*cos(b*x + a)*sin(b*x + a))*sqrt(d*x + c))/(b^3*d)
```

giac [C] time = 0.92, size = 806, normalized size = 3.97

$$240\left(\frac{\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{bd}\,\sqrt{dx+c}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{d}\right)e^{\left(\frac{2i\,bc-2i\,ad}{d}\right)}}{\sqrt{bd}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}+\frac{\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{bd}\,\sqrt{dx+c}\left(-\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{d}\right)e^{\left(\frac{-2i\,bc+2i\,ad}{d}\right)}}{\sqrt{bd}\left(-\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}+4\sqrt{dx+c}\right)c^2+d^2\left(\frac{64\left(3\,(dx+c\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(3/2)*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/960*(240*(sqrt(pi)*d*erf(-sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) +
1)/d)*e^((2*I*b*c - 2*I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)) + sqr
t(pi)*d*erf(-sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-2*I
*b*c + 2*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)) + 4*sqrt(d*x + c)
)*c^2 + d^2*(64*(3*(d*x + c)^(5/2) - 10*(d*x + c)^(3/2)*c + 15*sqrt(d*x + c
)*c^2)/d^2 + 15*(sqrt(pi)*(16*b^2*c^2 + 8*I*b*c*d - 3*d^2)*d*erf(-sqrt(b*d)
*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((2*I*b*c - 2*I*a*d)/d)/(sqrt
(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b^2) - 2*(4*I*(d*x + c)^(3/2)*b*d - 8*I*sqr
t(d*x + c)*b*c*d + 3*sqrt(d*x + c)*d^2)*e^((-2*I*(d*x + c)*b + 2*I*b*c - 2*
I*a*d)/d)/b^2)/d^2 + 15*(sqrt(pi)*(16*b^2*c^2 - 8*I*b*c*d - 3*d^2)*d*erf(-s
qrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-2*I*b*c + 2*I*a*d
)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b^2) - 2*(-4*I*(d*x + c)^(3/2)*b
*d + 8*I*sqrt(d*x + c)*b*c*d + 3*sqrt(d*x + c)*d^2)*e^((2*I*(d*x + c)*b - 2
*I*b*c + 2*I*a*d)/d)/b^2)/d^2) - 40*(3*sqrt(pi)*(4*b*c + I*d)*d*erf(-sqrt(b
*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((2*I*b*c - 2*I*a*d)/d)/(s
qrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b) + 3*sqrt(pi)*(4*b*c - I*d)*d*erf(-sqr
t(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-2*I*b*c + 2*I*a*d)/
d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b) - 16*(d*x + c)^(3/2) + 48*sqrt(
d*x + c)*c - 6*I*sqrt(d*x + c)*d*e^((2*I*(d*x + c)*b - 2*I*b*c + 2*I*a*d)/d
```

```
)/b + 6*I*sqrt(d*x + c)*d*e^((-2*I*(d*x + c)*b + 2*I*b*c - 2*I*a*d)/d)/b)*c
)/d
```

maple [A] time = 0.03, size = 197, normalized size = 0.97

$$\frac{\frac{(dx+c)^{\frac{5}{2}}}{5} - \frac{d(dx+c)^{\frac{3}{2}}\sin\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{4b} + \frac{3d\left(-\frac{d\sqrt{dx+c}\,\cos\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{4b}+\frac{d\sqrt{\pi}\left(\cos\left(\frac{2da-2cb}{d}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\sqrt{\frac{b}{d}}\,d}\right)-\sin\left(\frac{2da-2cb}{d}\right)\mathrm{S}\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\sqrt{\frac{b}{d}}\,d}\right)\right)}{8b\sqrt{\frac{b}{d}}}\right)}{4b}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(3/2)*sin(b*x+a)^2,x)
```

```
[Out] 2/d*(1/10*(d*x+c)^(5/2)-1/8/b*d*(d*x+c)^(3/2)*sin(2/d*(d*x+c)*b+2*(a*d-b*c)
/d)+3/8/b*d*(-1/4/b*d*(d*x+c)^(1/2)*cos(2/d*(d*x+c)*b+2*(a*d-b*c)/d)+1/8/b*
d*Pi^(1/2)/(b/d)^(1/2)*(cos(2*(a*d-b*c)/d)*FresnelC(2/Pi^(1/2)/(b/d)^(1/2)*
(d*x+c)^(1/2)*b/d)-sin(2*(a*d-b*c)/d)*FresnelS(2/Pi^(1/2)/(b/d)^(1/2)*(d*x+
c)^(1/2)*b/d))))
```

maxima [C] time = 0.51, size = 274, normalized size = 1.35

$$\sqrt{2}\left(\frac{128\sqrt{2}\,(dx+c)^{\frac{5}{2}}b^3}{d} - 160\sqrt{2}\,(dx+c)^{\frac{3}{2}}b^2\sin\left(\frac{2\left((dx+c)b-bc+ad\right)}{d}\right) - 120\sqrt{2}\,\sqrt{dx+c}\,bd\cos\left(\frac{2\left((dx+c)b-bc+ad\right)}{d}\right) - \left((15i - \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(3/2)*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/1280*sqrt(2)*(128*sqrt(2)*(d*x + c)^(5/2)*b^3/d - 160*sqrt(2)*(d*x + c)^(
3/2)*b^2*sin(2*((d*x + c)*b - b*c + a*d)/d) - 120*sqrt(2)*sqrt(d*x + c)*b*d
*cos(2*((d*x + c)*b - b*c + a*d)/d) - ((15*I - 15)*4^(1/4)*sqrt(pi)*d^2*(b^
2/d^2)^(1/4)*cos(-2*(b*c - a*d)/d) + (15*I + 15)*4^(1/4)*sqrt(pi)*d^2*(b^2/
d^2)^(1/4)*sin(-2*(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(2*I*b/d)) - (-(15*
I + 15)*4^(1/4)*sqrt(pi)*d^2*(b^2/d^2)^(1/4)*cos(-2*(b*c - a*d)/d) - (15*I
- 15)*4^(1/4)*sqrt(pi)*d^2*(b^2/d^2)^(1/4)*sin(-2*(b*c - a*d)/d))*erf(sqrt(
d*x + c)*sqrt(-2*I*b/d)))/b^3
```

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

$$\int \sin\left(a+b\,x\right)^2\,\left(c+d\,x\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(c + d*x)^(3/2),x)
```

```
[Out] int(sin(a + b*x)^2*(c + d*x)^(3/2), x)
```

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

$$\int (c+dx)^{\frac{3}{2}}\sin^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(3/2)*sin(b*x+a)**2,x)
```

```
[Out] Integral((c + d*x)**(3/2)*sin(a + b*x)**2, x)
```

3.47 $\int \sqrt{c+dx}\,\sin^2(a+bx)\,dx$

Optimal. Leaf size=158

$$\frac{\sqrt{\pi}\sqrt{d}\sin\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{8b^{3/2}}+\frac{\sqrt{\pi}\sqrt{d}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{8b^{3/2}}-\frac{\sqrt{c+dx}\sin(2a+2bx)}{4b}+\frac{(c+dx)^{3/2}}{3d}$$

```
[Out] 1/3*(d*x+c)^(3/2)/d+1/8*cos(2*a-2*b*c/d)*FresnelS(2*b^(1/2)*(d*x+c)^(1/2)/d
^(1/2)/Pi^(1/2))*d^(1/2)*Pi^(1/2)/b^(3/2)+1/8*FresnelC(2*b^(1/2)*(d*x+c)^(1
/2)/d^(1/2)/Pi^(1/2))*sin(2*a-2*b*c/d)*d^(1/2)*Pi^(1/2)/b^(3/2)-1/4*sin(2*b
*x+2*a)*(d*x+c)^(1/2)/b
```

Rubi [A] time = 0.28, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3312, 3296, 3306, 3305, 3351, 3304, 3352}

$$\frac{\sqrt{\pi}\sqrt{d}\sin\left(2a-\frac{2bc}{d}\right)\text{FresnelC}\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{\pi}\sqrt{d}}\right)}{8b^{3/2}}+\frac{\sqrt{\pi}\sqrt{d}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{8b^{3/2}}-\frac{\sqrt{c+dx}\sin(2a+2bx)}{4b}+(c+$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c + d*x]*Sin[a + b*x]^2,x]
```

```
[Out] (c + d*x)^(3/2)/(3*d) + (Sqrt[d]*Sqrt[Pi]*Cos[2*a - (2*b*c)/d]*FresnelS[(2*
Sqrt[b]*Sqrt[c + d*x])/(Sqrt[d]*Sqrt[Pi])])/(8*b^(3/2)) + (Sqrt[d]*Sqrt[Pi]
*FresnelC[(2*Sqrt[b]*Sqrt[c + d*x])/(Sqrt[d]*Sqrt[Pi])]*Sin[2*a - (2*b*c)/d
])/(8*b^(3/2)) - (Sqrt[c + d*x]*Sin[2*a + 2*b*x])/(4*b)
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \sqrt{c+dx}\,\sin^2(a+bx)\,dx = \int \left(\frac{1}{2}\sqrt{c+dx} - \frac{1}{2}\sqrt{c+dx}\,\cos(2a+2bx)\right)dx$$
$$= \frac{(c+dx)^{3/2}}{3d} - \frac{1}{2}\int \sqrt{c+dx}\,\cos(2a+2bx)\,dx$$
$$= \frac{(c+dx)^{3/2}}{3d} - \frac{\sqrt{c+dx}\,\sin(2a+2bx)}{4b} + \frac{d\int \frac{\sin(2a+2bx)}{\sqrt{c+dx}}\,dx}{8b}$$
$$= \frac{(c+dx)^{3/2}}{3d} - \frac{\sqrt{c+dx}\,\sin(2a+2bx)}{4b} + \frac{\left(d\cos\left(2a-\frac{2bc}{d}\right)\right)\int \frac{\sin\left(\frac{2bc}{d}+2bx\right)}{\sqrt{c+dx}}\,dx}{8b} + \frac{(d\sin$$
$$= \frac{(c+dx)^{3/2}}{3d} - \frac{\sqrt{c+dx}\,\sin(2a+2bx)}{4b} + \frac{\cos\left(2a-\frac{2bc}{d}\right)\mathrm{Subst}\left(\int \sin\left(\frac{2bx^2}{d}\right)dx, x, \sqrt{c}\right.}{4b}$$
$$= \frac{(c+dx)^{3/2}}{3d} + \frac{\sqrt{d}\sqrt{\pi}\,\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{8b^{3/2}} + \frac{\sqrt{d}\sqrt{\pi}\,C\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)\sin\left(2a\right.}{8b^{3/2}}$$

Mathematica [A] time = 0.56, size = 149, normalized size = 0.94

$$\frac{3\sqrt{\pi}\,d\sin\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{\frac{b}{d}}\sqrt{c+dx}}{\sqrt{\pi}}\right) + 3\sqrt{\pi}\,d\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{\frac{b}{d}}\sqrt{c+dx}}{\sqrt{\pi}}\right) + 2\sqrt{\frac{b}{d}}\sqrt{c+dx}\,(4b(c+dx)-3d\sin(2}{24d^2\left(\frac{b}{d}\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c + d*x]*Sin[a + b*x]^2,x]
```

```
[Out] (3*d*Sqrt[Pi]*Cos[2*a - (2*b*c)/d]*FresnelS[(2*Sqrt[b/d]*Sqrt[c + d*x])/Sqr
t[Pi]] + 3*d*Sqrt[Pi]*FresnelC[(2*Sqrt[b/d]*Sqrt[c + d*x])/Sqrt[Pi]]*Sin[2*
a - (2*b*c)/d] + 2*Sqrt[b/d]*Sqrt[c + d*x]*(4*b*(c + d*x) - 3*d*Sin[2*(a +
b*x)]))/(24*(b/d)^(3/2)*d^2)
```

fricas [A] time = 0.82, size = 148, normalized size = 0.94

$$\frac{3\,\pi d^2\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{2\,(bc-ad)}{d}\right)\mathrm{S}\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right) + 3\,\pi d^2\sqrt{\frac{b}{\pi d}}\,\mathrm{C}\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)\sin\left(-\frac{2\,(bc-ad)}{d}\right) + 4\left(2\,b^2dx-3\,bd\right.}{24\,b^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(1/2)*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/24*(3*pi*d^2*sqrt(b/(pi*d))*cos(-2*(b*c - a*d)/d)*fresnel_sin(2*sqrt(d*x
+ c)*sqrt(b/(pi*d))) + 3*pi*d^2*sqrt(b/(pi*d))*fresnel_cos(2*sqrt(d*x + c)*
sqrt(b/(pi*d)))*sin(-2*(b*c - a*d)/d) + 4*(2*b^2*d*x - 3*b*d*cos(b*x + a)*s
in(b*x + a) + 2*b^2*c)*sqrt(d*x + c))/(b^2*d)
```

giac [C] time = 1.16, size = 428, normalized size = 2.71

$$12\left(\frac{\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{bd}\,\sqrt{dx+c}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{d}\right)e^{\left(\frac{2i\,bc-2i\,ad}{d}\right)}}{\sqrt{bd}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}+\frac{\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{bd}\,\sqrt{dx+c}\left(-\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{d}\right)e^{\left(\frac{-2i\,bc+2i\,ad}{d}\right)}}{\sqrt{bd}\left(-\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}+4\sqrt{dx+c}\right)c-\frac{3\sqrt{\pi}\,(4\,bc+i\,d)d\,\mathrm{erf}}{\quad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(1/2)*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/48*(12*(sqrt(pi)*d*erf(-sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)
/d)*e^((2*I*b*c - 2*I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)) + sqrt(
pi)*d*erf(-sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-2*I*b
*c + 2*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)) + 4*sqrt(d*x + c))*
c - 3*sqrt(pi)*(4*b*c + I*d)*d*erf(-sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2
*d^2) + 1)/d)*e^((2*I*b*c - 2*I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1
)*b) - 3*sqrt(pi)*(4*b*c - I*d)*d*erf(-sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt
(b^2*d^2) + 1)/d)*e^((-2*I*b*c + 2*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^
2) + 1)*b) + 16*(d*x + c)^(3/2) - 48*sqrt(d*x + c)*c + 6*I*sqrt(d*x + c)*d*
e^((2*I*(d*x + c)*b - 2*I*b*c + 2*I*a*d)/d)/b - 6*I*sqrt(d*x + c)*d*e^((-2*
I*(d*x + c)*b + 2*I*b*c - 2*I*a*d)/d)/b)/d
```

maple [A] time = 0.03, size = 150, normalized size = 0.95

$$\frac{\frac{(dx+c)^{\frac{3}{2}}}{3}-\frac{d\sqrt{dx+c}\,\sin\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{4b}+\frac{d\sqrt{\pi}\left(\cos\left(\frac{2da-2cb}{d}\right)\mathrm{S}\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)+\sin\left(\frac{2da-2cb}{d}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{8b\sqrt{\frac{b}{d}}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(1/2)*sin(b*x+a)^2,x)
```

```
[Out] 2/d*(1/6*(d*x+c)^(3/2)-1/8/b*d*(d*x+c)^(1/2)*sin(2/d*(d*x+c)*b+2*(a*d-b*c)/
d)+1/16/b*d*Pi^(1/2)/(b/d)^(1/2)*(cos(2*(a*d-b*c)/d)*FresnelS(2/Pi^(1/2)/(b
/d)^(1/2)*(d*x+c)^(1/2)*b/d)+sin(2*(a*d-b*c)/d)*FresnelC(2/Pi^(1/2)/(b/d)^(
1/2)*(d*x+c)^(1/2)*b/d)))
```

maxima [C] time = 0.84, size = 229, normalized size = 1.45

$$\frac{\sqrt{2}\left(\frac{32\sqrt{2}(dx+c)^{\frac{3}{2}}b^2}{d} - 24\sqrt{2}\sqrt{dx+c}\,b\sin\left(\frac{2((dx+c)b-bc+ad)}{d}\right) - \left(-(3i+3)\cdot 4^{\frac{1}{4}}\sqrt{\pi}\,d\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\cos\left(-\frac{2(bc-ad)}{d}\right) + (3i-3)\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(1/2)*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/192*sqrt(2)*(32*sqrt(2)*(d*x + c)^(3/2)*b^2/d - 24*sqrt(2)*sqrt(d*x + c)*
b*sin(2*((d*x + c)*b - b*c + a*d)/d) - (-(3*I + 3)*4^(1/4)*sqrt(pi)*d*(b^2/
d^2)^(1/4)*cos(-2*(b*c - a*d)/d) + (3*I - 3)*4^(1/4)*sqrt(pi)*d*(b^2/d^2)^(
1/4)*sin(-2*(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(2*I*b/d)) - ((3*I - 3)*4
^(1/4)*sqrt(pi)*d*(b^2/d^2)^(1/4)*cos(-2*(b*c - a*d)/d) - (3*I + 3)*4^(1/4)
*sqrt(pi)*d*(b^2/d^2)^(1/4)*sin(-2*(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(-
2*I*b/d)))/b^2
```

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

$$\int \sin(a+b\,x)^2\,\sqrt{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(c + d*x)^(1/2),x)
```

```
[Out] int(sin(a + b*x)^2*(c + d*x)^(1/2), x)
```

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

$$\int \sqrt{c+dx}\,\sin^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(1/2)*sin(b*x+a)**2,x)
```

```
[Out] Integral(sqrt(c + d*x)*sin(a + b*x)**2, x)
```

3.48 $\int \frac{\sin^2(a+bx)}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=130

$$-\frac{\sqrt{\pi}\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{2\sqrt{b}\sqrt{d}}+\frac{\sqrt{\pi}\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{2\sqrt{b}\sqrt{d}}+\frac{\sqrt{c+dx}}{d}$$

```
[Out] -1/2*cos(2*a-2*b*c/d)*FresnelC(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/2)/Pi^(1/2))*Pi
^(1/2)/b^(1/2)/d^(1/2)+1/2*FresnelS(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/2)/Pi^(1/2
))*sin(2*a-2*b*c/d)*Pi^(1/2)/b^(1/2)/d^(1/2)+(d*x+c)^(1/2)/d
```

Rubi [A] time = 0.23, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3312, 3306, 3305, 3351, 3304, 3352}

$$-\frac{\sqrt{\pi}\cos\left(2a-\frac{2bc}{d}\right)\text{FresnelC}\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{\pi}\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}}+\frac{\sqrt{\pi}\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{2\sqrt{b}\sqrt{d}}+\frac{\sqrt{c+dx}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2/Sqrt[c + d*x],x]
```

```
[Out] Sqrt[c + d*x]/d - (Sqrt[Pi]*Cos[2*a - (2*b*c)/d]*FresnelC[(2*Sqrt[b]*Sqrt[c
 + d*x])/(Sqrt[d]*Sqrt[Pi])])/(2*Sqrt[b]*Sqrt[d]) + (Sqrt[Pi]*FresnelS[(2*S
qrt[b]*Sqrt[c + d*x])/(Sqrt[d]*Sqrt[Pi])]*Sin[2*a - (2*b*c)/d])/(2*Sqrt[b]*
Sqrt[d])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
```

```
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^2(a+bx)}{\sqrt{c+dx}}\,dx &= \int \left(\frac{1}{2\sqrt{c+dx}} - \frac{\cos(2a+2bx)}{2\sqrt{c+dx}}\right) dx \\
&= \frac{\sqrt{c+dx}}{d} - \frac{1}{2}\int \frac{\cos(2a+2bx)}{\sqrt{c+dx}}\,dx \\
&= \frac{\sqrt{c+dx}}{d} - \frac{1}{2}\cos\left(2a-\frac{2bc}{d}\right)\int \frac{\cos\left(\frac{2bc}{d}+2bx\right)}{\sqrt{c+dx}}\,dx + \frac{1}{2}\sin\left(2a-\frac{2bc}{d}\right)\int \frac{\sin\left(\frac{2bc}{d}+2bx\right)}{\sqrt{c+dx}}\,d \\
&= \frac{\sqrt{c+dx}}{d} - \frac{\cos\left(2a-\frac{2bc}{d}\right)\text{Subst}\left(\int \cos\left(\frac{2bx^2}{d}\right)dx, x, \sqrt{c+dx}\right)}{d} + \frac{\sin\left(2a-\frac{2bc}{d}\right)\text{Subst}\left(\int \text{si}\right.}{d} \\
&= \frac{\sqrt{c+dx}}{d} - \frac{\sqrt{\pi}\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{2\sqrt{b}\sqrt{d}} + \frac{\sqrt{\pi}\,S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)\sin\left(2a-\frac{2bc}{d}\right)}{2\sqrt{b}\sqrt{d}}
\end{aligned}$$

Mathematica [A] time = 0.24, size = 126, normalized size = 0.97

$$\frac{\sqrt{\frac{b}{d}}\left(-\sqrt{\pi}\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{\frac{b}{d}}\sqrt{c+dx}}{\sqrt{\pi}}\right)+\sqrt{\pi}\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{\frac{b}{d}}\sqrt{c+dx}}{\sqrt{\pi}}\right)+2\sqrt{\frac{b}{d}}\sqrt{c+dx}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2/Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[b/d]*(2*Sqrt[b/d]*Sqrt[c + d*x] - Sqrt[Pi]*Cos[2*a - (2*b*c)/d]*Fresn
elC[(2*Sqrt[b/d]*Sqrt[c + d*x])/Sqrt[Pi]] + Sqrt[Pi]*FresnelS[(2*Sqrt[b/d]*
Sqrt[c + d*x])/Sqrt[Pi]]*Sin[2*a - (2*b*c)/d]))/(2*b)
```

fricas [A] time = 0.78, size = 114, normalized size = 0.88

$$-\frac{\pi d\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{2(bc-ad)}{d}\right)C\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)-\pi d\sqrt{\frac{b}{\pi d}}\,S\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)\sin\left(-\frac{2(bc-ad)}{d}\right)-2\sqrt{dx+c}\,b}{2\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2*(pi*d*sqrt(b/(pi*d))*cos(-2*(b*c - a*d)/d)*fresnel_cos(2*sqrt(d*x + c)
*sqrt(b/(pi*d))) - pi*d*sqrt(b/(pi*d))*fresnel_sin(2*sqrt(d*x + c)*sqrt(b/(
pi*d)))*sin(-2*(b*c - a*d)/d) - 2*sqrt(d*x + c)*b)/(b*d)
```

giac [C] time = 1.13, size = 163, normalized size = 1.25

$$\frac{\frac{\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{bd}\,\sqrt{dx+c}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{d}\right)e^{\left(\frac{2i\,bc-2i\,ad}{d}\right)}}{\sqrt{bd}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}+\frac{\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{bd}\,\sqrt{dx+c}\left(-\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{d}\right)e^{\left(\frac{-2i\,bc+2i\,ad}{d}\right)}}{\sqrt{bd}\left(-\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}+4\sqrt{dx+c}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(sqrt(pi)*d*erf(-sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e
^((2*I*b*c - 2*I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)) + sqrt(pi)*d
*erf(-sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-2*I*b*c +
2*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)) + 4*sqrt(d*x + c))/d
```

maple [A] time = 0.04, size = 108, normalized size = 0.83

$$\frac{\sqrt{dx+c}-\frac{\sqrt{\pi}\left(\cos\left(\frac{2da-2cb}{d}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)-\sin\left(\frac{2da-2cb}{d}\right)\mathrm{S}\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{2\sqrt{\frac{b}{d}}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*x+c)^(1/2),x)
```

```
[Out] 2/d*(1/2*(d*x+c)^(1/2)-1/4*Pi^(1/2)/(b/d)^(1/2)*(cos(2*(a*d-b*c)/d)*Fresnel
C(2/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)-sin(2*(a*d-b*c)/d)*FresnelS(2/P
i^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)))
```

maxima [C] time = 0.77, size = 187, normalized size = 1.44

$$\frac{\sqrt{2}\left(\left(\left(i-1\right)\cdot 4^{\frac{1}{4}}\sqrt{\pi}\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\cos\left(-\frac{2\left(bc-ad\right)}{d}\right)+\left(i+1\right)\cdot 4^{\frac{1}{4}}\sqrt{\pi}\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\sin\left(-\frac{2\left(bc-ad\right)}{d}\right)\right)\mathrm{erf}\left(\sqrt{dx+c}\sqrt{\frac{2ib}{d}}\right)+\left(-\left(i+1\right.\right.\right.}{16b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/16*sqrt(2)*(((I - 1)*4^(1/4)*sqrt(pi)*(b^2/d^2)^(1/4)*cos(-2*(b*c - a*d)/
d) + (I + 1)*4^(1/4)*sqrt(pi)*(b^2/d^2)^(1/4)*sin(-2*(b*c - a*d)/d))*erf(sq
rt(d*x + c)*sqrt(2*I*b/d)) + (-(I + 1)*4^(1/4)*sqrt(pi)*(b^2/d^2)^(1/4)*cos
(-2*(b*c - a*d)/d) - (I - 1)*4^(1/4)*sqrt(pi)*(b^2/d^2)^(1/4)*sin(-2*(b*c -
 a*d)/d))*erf(sqrt(d*x + c)*sqrt(-2*I*b/d)) + 8*sqrt(2)*sqrt(d*x + c)*b/d)/
b
```

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

$$\int \frac{\sin\left(a+b\,x\right)^2}{\sqrt{c+d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(c + d*x)^(1/2),x)
```

```
[Out] int(sin(a + b*x)^2/(c + d*x)^(1/2), x)
```

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

$$\int \frac{\sin^2\left(a+bx\right)}{\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*x+c)**(1/2),x)
```

```
[Out] Integral(sin(a + b*x)**2/sqrt(c + d*x), x)
```

3.49 $\int \frac{\sin^2(a+bx)}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=135

$$\frac{2\sqrt{\pi}\sqrt{b}\sin\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{d^{3/2}}+\frac{2\sqrt{\pi}\sqrt{b}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{d^{3/2}}-\frac{2\sin^2(a+bx)}{d\sqrt{c+dx}}$$

```
[Out] 2*cos(2*a-2*b*c/d)*FresnelS(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/2)/Pi^(1/2))*b^(1/
2)*Pi^(1/2)/d^(3/2)+2*FresnelC(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/2)/Pi^(1/2))*si
n(2*a-2*b*c/d)*b^(1/2)*Pi^(1/2)/d^(3/2)-2*sin(b*x+a)^2/d/(d*x+c)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3313, 12, 3306, 3305, 3351, 3304, 3352}

$$\frac{2\sqrt{\pi}\sqrt{b}\sin\left(2a-\frac{2bc}{d}\right)\text{FresnelC}\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{\pi}\sqrt{d}}\right)}{d^{3/2}}+\frac{2\sqrt{\pi}\sqrt{b}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{d^{3/2}}-\frac{2\sin^2(a+bx)}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2/(c + d*x)^(3/2),x]
```

```
[Out] (2*Sqrt[b]*Sqrt[Pi]*Cos[2*a - (2*b*c)/d]*FresnelS[(2*Sqrt[b]*Sqrt[c + d*x])
/(Sqrt[d]*Sqrt[Pi])])/d^(3/2) + (2*Sqrt[b]*Sqrt[Pi]*FresnelC[(2*Sqrt[b]*Sqr
t[c + d*x])/(Sqrt[d]*Sqrt[Pi])]*Sin[2*a - (2*b*c)/d])/d^(3/2) - (2*Sin[a +
b*x]^2)/(d*Sqrt[c + d*x])
```

Rule 12

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

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin^2(a+bx)}{(c+dx)^{3/2}}\,dx = -\frac{2\sin^2(a+bx)}{d\sqrt{c+dx}} + \frac{(4b)\int \frac{\sin(2a+2bx)}{2\sqrt{c+dx}}\,dx}{d}$$
$$= -\frac{2\sin^2(a+bx)}{d\sqrt{c+dx}} + \frac{(2b)\int \frac{\sin(2a+2bx)}{\sqrt{c+dx}}\,dx}{d}$$
$$= -\frac{2\sin^2(a+bx)}{d\sqrt{c+dx}} + \frac{\left(2b\cos\left(2a-\frac{2bc}{d}\right)\right)\int \frac{\sin\left(\frac{2bc}{d}+2bx\right)}{\sqrt{c+dx}}\,dx}{d} + \frac{\left(2b\sin\left(2a-\frac{2bc}{d}\right)\right)\int \frac{\cos\left(\frac{2bc}{d}+2bx\right)}{\sqrt{c+dx}}}{d}$$
$$= -\frac{2\sin^2(a+bx)}{d\sqrt{c+dx}} + \frac{\left(4b\cos\left(2a-\frac{2bc}{d}\right)\right)\text{Subst}\left(\int \sin\left(\frac{2bx^2}{d}\right)\,dx, x, \sqrt{c+dx}\right)}{d^2} + \frac{\left(4b\sin\left(2a\right.\right.}{}$$
$$= \frac{2\sqrt{b}\sqrt{\pi}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{d^{3/2}} + \frac{2\sqrt{b}\sqrt{\pi}\,C\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)\sin\left(2a-\frac{2bc}{d}\right)}{d^{3/2}} - \frac{2\sin^2(a}{d\sqrt{c+}}$$

Mathematica [A] time = 0.43, size = 149, normalized size = 1.10

$$\frac{2\sqrt{\pi}\sqrt{\frac{b}{d}}\sqrt{c+dx}\sin\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{\frac{b}{d}}\sqrt{c+dx}}{\sqrt{\pi}}\right) + 2\sqrt{\pi}\sqrt{\frac{b}{d}}\sqrt{c+dx}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{\frac{b}{d}}\sqrt{c+dx}}{\sqrt{\pi}}\right) + \cos(2(a+b}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2/(c + d*x)^(3/2),x]
```

```
[Out] (-1 + Cos[2*(a + b*x)] + 2*Sqrt[b/d]*Sqrt[Pi]*Sqrt[c + d*x]*Cos[2*a - (2*b*
c)/d]*FresnelS[(2*Sqrt[b/d]*Sqrt[c + d*x])/Sqrt[Pi]] + 2*Sqrt[b/d]*Sqrt[Pi]
*Sqrt[c + d*x]*FresnelC[(2*Sqrt[b/d]*Sqrt[c + d*x])/Sqrt[Pi]]*Sin[2*a - (2*
b*c)/d])/(d*Sqrt[c + d*x])
```

fricas [A] time = 0.87, size = 138, normalized size = 1.02

$$\frac{2\left((\pi dx+\pi c)\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{2(bc-ad)}{d}\right)\mathrm{S}\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right) + (\pi dx+\pi c)\sqrt{\frac{b}{\pi d}}\,\mathrm{C}\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)\sin\left(-\frac{2(bc-ad)}{d}\right) + \right.}{d^2x+cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(3/2),x, algorithm="fricas")
```

[Out] 2*((pi*d*x + pi*c)*sqrt(b/(pi*d))*cos(-2*(b*c - a*d)/d)*fresnel_sin(2*sqrt(
d*x + c)*sqrt(b/(pi*d))) + (pi*d*x + pi*c)*sqrt(b/(pi*d))*fresnel_cos(2*sqr
t(d*x + c)*sqrt(b/(pi*d)))*sin(-2*(b*c - a*d)/d) + sqrt(d*x + c)*(cos(b*x +
 a)^2 - 1))/(d^2*x + c*d)

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

$$\int \frac{\sin(bx+a)^2}{(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sin(b*x+a)^2/(d*x+c)^(3/2),x, algorithm="giac")

[Out] integrate(sin(b*x + a)^2/(d*x + c)^(3/2), x)

maple [A] time = 0.03, size = 145, normalized size = 1.07

$$\frac{-\frac{1}{\sqrt{dx+c}}+\frac{\cos\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{\sqrt{dx+c}}+\frac{2b\sqrt{\pi}\left(\cos\left(\frac{2da-2cb}{d}\right)S\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)+\sin\left(\frac{2da-2cb}{d}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{d\sqrt{\frac{b}{d}}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(sin(b*x+a)^2/(d*x+c)^(3/2),x)

[Out] 2/d*(-1/2/(d*x+c)^(1/2)+1/2/(d*x+c)^(1/2)*cos(2/d*(d*x+c)*b+2*(a*d-b*c)/d)+
b/d*Pi^(1/2)/(b/d)^(1/2)*(cos(2*(a*d-b*c)/d)*FresnelS(2/Pi^(1/2)/(b/d)^(1/2
)*(d*x+c)^(1/2)*b/d)+sin(2*(a*d-b*c)/d)*FresnelC(2/Pi^(1/2)/(b/d)^(1/2)*(d*
x+c)^(1/2)*b/d)))

maxima [C] time = 1.92, size = 135, normalized size = 1.00

$$-\frac{\sqrt{2}\left(\left(-(i+1)\sqrt{2}\,\Gamma\left(-\frac{1}{2},\frac{2i(dx+c)b}{d}\right)+(i-1)\sqrt{2}\,\Gamma\left(-\frac{1}{2},-\frac{2i(dx+c)b}{d}\right)\right)\cos\left(-\frac{2(bc-ad)}{d}\right)+\left((i-1)\sqrt{2}\,\Gamma\left(-\frac{1}{2},\frac{2i(dx+c)b}{d}\right.\right.}{8\sqrt{dx+c}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sin(b*x+a)^2/(d*x+c)^(3/2),x, algorithm="maxima")

[Out] -1/8*(sqrt(2)*((-(I + 1)*sqrt(2)*gamma(-1/2, 2*I*(d*x + c)*b/d) + (I - 1)*s
qrt(2)*gamma(-1/2, -2*I*(d*x + c)*b/d))*cos(-2*(b*c - a*d)/d) + ((I - 1)*sq
rt(2)*gamma(-1/2, 2*I*(d*x + c)*b/d) - (I + 1)*sqrt(2)*gamma(-1/2, -2*I*(d*

```
x + c)*b/d))*sin(-2*(b*c - a*d)/d))*sqrt((d*x + c)*b/d) + 8)/(sqrt(d*x + c)
*d)
```

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

$$\int \frac{\sin\left(a+b\,x\right)^2}{{\left(c+d\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(c + d*x)^(3/2),x)
```

```
[Out] int(sin(a + b*x)^2/(c + d*x)^(3/2), x)
```

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

$$\int \frac{\sin^{2}{\left(a + bx \right)}}{\left(c + dx\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*x+c)**(3/2),x)
```

```
[Out] Integral(sin(a + b*x)**2/(c + d*x)**(3/2), x)
```

3.50 $\int \frac{\sin^2(a+bx)}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=170

$$\frac{8\sqrt{\pi}\,b^{3/2}\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{3d^{5/2}}-\frac{8\sqrt{\pi}\,b^{3/2}\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{3d^{5/2}}-\frac{8b\sin(a+bx)\cos(a+bx)}{3d^2\sqrt{c+dx}}-\frac{2\sin^2}{3d(c\cdot}$$

```
[Out] -2/3*sin(b*x+a)^2/d/(d*x+c)^(3/2)+8/3*b^(3/2)*cos(2*a-2*b*c/d)*FresnelC(2*b
^(1/2)*(d*x+c)^(1/2)/d^(1/2)/Pi^(1/2))*Pi^(1/2)/d^(5/2)-8/3*b^(3/2)*Fresnel
S(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/2)/Pi^(1/2))*sin(2*a-2*b*c/d)*Pi^(1/2)/d^(5/
2)-8/3*b*cos(b*x+a)*sin(b*x+a)/d^2/(d*x+c)^(1/2)
```

Rubi [A] time = 0.33, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {3314, 32, 3312, 3306, 3305, 3351, 3304, 3352}

$$\frac{8\sqrt{\pi}\,b^{3/2}\cos\left(2a-\frac{2bc}{d}\right)\text{FresnelC}\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{\pi}\,\sqrt{d}}\right)}{3d^{5/2}}-\frac{8\sqrt{\pi}\,b^{3/2}\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{3d^{5/2}}-\frac{8b\sin(a+bx)\cos(a+bx)}{3d^2\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2/(c + d*x)^(5/2),x]
```

```
[Out] (8*b^(3/2)*Sqrt[Pi]*Cos[2*a - (2*b*c)/d]*FresnelC[(2*Sqrt[b]*Sqrt[c + d*x])
/(Sqrt[d]*Sqrt[Pi])])/(3*d^(5/2)) - (8*b^(3/2)*Sqrt[Pi]*FresnelS[(2*Sqrt[b]
*Sqrt[c + d*x])/(Sqrt[d]*Sqrt[Pi])]*Sin[2*a - (2*b*c)/d])/(3*d^(5/2)) - (8*
b*Cos[a + b*x]*Sin[a + b*x])/(3*d^2*Sqrt[c + d*x]) - (2*Sin[a + b*x]^2)/(3*
d*(c + d*x)^(3/2))
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin^2(a+bx)}{(c+dx)^{5/2}}\,dx = -\frac{8b\cos(a+bx)\sin(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sin^2(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(8b^2\right)\int \frac{1}{\sqrt{c+dx}}\,dx}{3d^2} - \frac{\left(16b^2\right)\int \frac{\sin^2(a+bx)}{\sqrt{c+dx}}\,dx}{3d^2}$$

$$= \frac{16b^2\sqrt{c+dx}}{3d^3} - \frac{8b\cos(a+bx)\sin(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sin^2(a+bx)}{3d(c+dx)^{3/2}} - \frac{\left(16b^2\right)\int \left(\frac{1}{2\sqrt{c+dx}} - \frac{\cos(2a+2bx)}{2\sqrt{c+dx}}\right.}{3d^2}$$

$$= -\frac{8b\cos(a+bx)\sin(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sin^2(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(8b^2\right)\int \frac{\cos(2a+2bx)}{\sqrt{c+dx}}\,dx}{3d^2}$$

$$= -\frac{8b\cos(a+bx)\sin(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sin^2(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(8b^2\cos\left(2a-\frac{2bc}{d}\right)\right)\int \frac{\cos\left(\frac{2bc}{d}+2bx\right)}{\sqrt{c+dx}}\,dx}{3d^2} - \frac{(8b}{}$$

$$= -\frac{8b\cos(a+bx)\sin(a+bx)}{3d^2\sqrt{c+dx}} - \frac{2\sin^2(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(16b^2\cos\left(2a-\frac{2bc}{d}\right)\right)\text{Subst}\left(\int \cos\left(\frac{2bx^2}{d}\right) d\right.}{3d^3}$$

$$= \frac{8b^{3/2}\sqrt{\pi}\,\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{3d^{5/2}} - \frac{8b^{3/2}\sqrt{\pi}\,S\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)\sin\left(2a-\frac{2bc}{d}\right)}{3d^{5/2}} - \frac{8b\cos(a+}{3d^2}$$

Mathematica [A] time = 1.49, size = 158, normalized size = 0.93

$$\frac{2\left(4\sqrt{\pi}\,b\sqrt{\frac{b}{d}}\,\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{\frac{b}{d}}\,\sqrt{c+dx}}{\sqrt{\pi}}\right) - 4\sqrt{\pi}\,b\sqrt{\frac{b}{d}}\,\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{\frac{b}{d}}\,\sqrt{c+dx}}{\sqrt{\pi}}\right) - \frac{\sin(a+bx)(4b(c+dx)\cos(a+bx)+d\,s}{(c+dx)^{3/2}}\right.}{3d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2/(c + d*x)^(5/2),x]
```

```
[Out] (2*(4*b*Sqrt[b/d]*Sqrt[Pi]*Cos[2*a - (2*b*c)/d]*FresnelC[(2*Sqrt[b/d]*Sqrt[
c + d*x])/Sqrt[Pi]] - 4*b*Sqrt[b/d]*Sqrt[Pi]*FresnelS[(2*Sqrt[b/d]*Sqrt[c +
 d*x])/Sqrt[Pi]]*Sin[2*a - (2*b*c)/d] - (Sin[a + b*x]*(4*b*(c + d*x)*Cos[a
+ b*x] + d*Sin[a + b*x]))/(c + d*x)^(3/2)))/(3*d^2)
```

fricas [A] time = 0.82, size = 209, normalized size = 1.23

$$\frac{2\left(4\left(\pi b d^2x^2 + 2\,\pi bcdx + \pi bc^2\right)\sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{2\,(bc-ad)}{d}\right)\mathrm{C}\left(2\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right) - 4\left(\pi b d^2x^2 + 2\,\pi bcdx + \pi bc^2\right)\sqrt{\frac{b}{\pi d}}\,\mathrm{S}\left(\right.\right.}{3\left(d^4x^2 + 2\,cd^3x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(4*(pi*b*d^2*x^2 + 2*pi*b*c*d*x + pi*b*c^2)*sqrt(b/(pi*d))*cos(-2*(b*c
- a*d)/d)*fresnel_cos(2*sqrt(d*x + c)*sqrt(b/(pi*d))) - 4*(pi*b*d^2*x^2 + 2
*pi*b*c*d*x + pi*b*c^2)*sqrt(b/(pi*d))*fresnel_sin(2*sqrt(d*x + c)*sqrt(b/(
pi*d)))*sin(-2*(b*c - a*d)/d) + (d*cos(b*x + a)^2 - 4*(b*d*x + b*c)*cos(b*x
 + a)*sin(b*x + a) - d)*sqrt(d*x + c))/(d^4*x^2 + 2*c*d^3*x + c^2*d^2)
```

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

$$\int \frac{\sin\left(bx+a\right)^2}{\left(dx+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^2/(d*x + c)^(5/2), x)
```

maple [A] time = 0.04, size = 189, normalized size = 1.11

$$\frac{-\frac{1}{3(dx+c)^{\frac{3}{2}}}+\frac{\cos\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{3(dx+c)^{\frac{3}{2}}}+\frac{4b\left(-\frac{\sin\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{\sqrt{dx+c}}+\frac{2b\sqrt{\pi}\left(\cos\left(\frac{2da-2cb}{d}\right)\mathrm{FresnelC}\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\sqrt{\frac{b}{d}}\,d}\right)-\sin\left(\frac{2da-2cb}{d}\right)\mathrm{S}\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\sqrt{\frac{b}{d}}\,d}\right)\right)}{d\sqrt{\frac{b}{d}}}\right)}{3d}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*x+c)^(5/2),x)
```

```
[Out] 2/d*(-1/6/(d*x+c)^(3/2)+1/6/(d*x+c)^(3/2)*cos(2/d*(d*x+c)*b+2*(a*d-b*c)/d)+
2/3*b/d*(-1/(d*x+c)^(1/2)*sin(2/d*(d*x+c)*b+2*(a*d-b*c)/d)+2*b/d*Pi^(1/2)/(
b/d)^(1/2)*(cos(2*(a*d-b*c)/d)*FresnelC(2/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2
)*b/d)-sin(2*(a*d-b*c)/d)*FresnelS(2/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d
))))
```

maxima [C] time = 1.20, size = 135, normalized size = 0.79

$$\frac{\sqrt{2}\left(\left(\left(3i-3\right)\sqrt{2}\,\Gamma\left(-\frac{3}{2},\frac{2i\,(dx+c)b}{d}\right)-\left(3i+3\right)\sqrt{2}\,\Gamma\left(-\frac{3}{2},-\frac{2i\,(dx+c)b}{d}\right)\right)\cos\left(-\frac{2\,(bc-ad)}{d}\right)+\left(\left(3i+3\right)\sqrt{2}\,\Gamma\left(-\frac{3}{2},\frac{2i\,(dx+c}{d}\right.\right.\right.}{12\,(dx+c)^{\frac{3}{2}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/12*(sqrt(2)*(((3*I - 3)*sqrt(2)*gamma(-3/2, 2*I*(d*x + c)*b/d) - (3*I + 3
)*sqrt(2)*gamma(-3/2, -2*I*(d*x + c)*b/d))*cos(-2*(b*c - a*d)/d) + ((3*I +
3)*sqrt(2)*gamma(-3/2, 2*I*(d*x + c)*b/d) - (3*I - 3)*sqrt(2)*gamma(-3/2, -
2*I*(d*x + c)*b/d))*sin(-2*(b*c - a*d)/d))*((d*x + c)*b/d)^(3/2) - 4)/((d*x
 + c)^(3/2)*d)
```

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

$$\int \frac{\sin(a+b\,x)^2}{(c+d\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(c + d*x)^(5/2),x)
```

```
[Out] int(sin(a + b*x)^2/(c + d*x)^(5/2), x)
```

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

$$\int \frac{\sin^2(a+bx)}{(c+dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*x+c)**(5/2),x)
```

```
[Out] Integral(sin(a + b*x)**2/(c + d*x)**(5/2), x)
```

3.51 $\int \frac{\sin^2(a+bx)}{(c+dx)^{7/2}}\,dx$

Optimal. Leaf size=216

$$-\frac{32\sqrt{\pi}\,b^{5/2}\sin\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{15d^{7/2}}-\frac{32\sqrt{\pi}\,b^{5/2}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{15d^{7/2}}+\frac{32b^2\sin^2(a+bx)}{15d^3\sqrt{c+dx}}-\frac{8b\sin(a}{15d}$$

```
[Out] -8/15*b*cos(b*x+a)*sin(b*x+a)/d^2/(d*x+c)^(3/2)-2/5*sin(b*x+a)^2/d/(d*x+c)^
(5/2)-32/15*b^(5/2)*cos(2*a-2*b*c/d)*FresnelS(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/
2)/Pi^(1/2))*Pi^(1/2)/d^(7/2)-32/15*b^(5/2)*FresnelC(2*b^(1/2)*(d*x+c)^(1/2
)/d^(1/2)/Pi^(1/2))*sin(2*a-2*b*c/d)*Pi^(1/2)/d^(7/2)-16/15*b^2/d^3/(d*x+c)
^(1/2)+32/15*b^2*sin(b*x+a)^2/d^3/(d*x+c)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {3314, 32, 3313, 12, 3306, 3305, 3351, 3304, 3352}

$$-\frac{32\sqrt{\pi}\,b^{5/2}\sin\left(2a-\frac{2bc}{d}\right)\text{FresnelC}\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{\pi}\sqrt{d}}\right)}{15d^{7/2}}-\frac{32\sqrt{\pi}\,b^{5/2}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{15d^{7/2}}+\frac{32b^2\sin^2(a+bx)}{15d^3\sqrt{c+dx}}-\frac{8}{}$$

Antiderivative was successfully verified.

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

```
[Out] (-16*b^2)/(15*d^3*Sqrt[c + d*x]) - (32*b^(5/2)*Sqrt[Pi]*Cos[2*a - (2*b*c)/d
]*FresnelS[(2*Sqrt[b]*Sqrt[c + d*x])/(Sqrt[d]*Sqrt[Pi])])/(15*d^(7/2)) - (3
2*b^(5/2)*Sqrt[Pi]*FresnelC[(2*Sqrt[b]*Sqrt[c + d*x])/(Sqrt[d]*Sqrt[Pi])]*S
in[2*a - (2*b*c)/d])/(15*d^(7/2)) - (8*b*Cos[a + b*x]*Sin[a + b*x])/(15*d^2
*(c + d*x)^(3/2)) - (2*Sin[a + b*x]^2)/(5*d*(c + d*x)^(5/2)) + (32*b^2*Sin[
a + b*x]^2)/(15*d^3*Sqrt[c + d*x])
```

Rule 12

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

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin^2(a+bx)}{(c+dx)^{7/2}}\,dx = -\frac{8b\cos(a+bx)\sin(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sin^2(a+bx)}{5d(c+dx)^{5/2}} + \frac{\left(8b^2\right)\int \frac{1}{(c+dx)^{3/2}}\,dx}{15d^2} - \frac{\left(16b^2\right)\int \frac{\sin^2(a+bx)}{(c+dx)^{3/2}}\,dx}{15d^2}$$

$$= -\frac{16b^2}{15d^3\sqrt{c+dx}} - \frac{8b\cos(a+bx)\sin(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sin^2(a+bx)}{5d(c+dx)^{5/2}} + \frac{32b^2\sin^2(a+bx)}{15d^3\sqrt{c+dx}} - \frac{\left(64b\right.}{}$$

$$= -\frac{16b^2}{15d^3\sqrt{c+dx}} - \frac{8b\cos(a+bx)\sin(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sin^2(a+bx)}{5d(c+dx)^{5/2}} + \frac{32b^2\sin^2(a+bx)}{15d^3\sqrt{c+dx}} - \frac{\left(32b\right.}{}$$

$$= -\frac{16b^2}{15d^3\sqrt{c+dx}} - \frac{8b\cos(a+bx)\sin(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sin^2(a+bx)}{5d(c+dx)^{5/2}} + \frac{32b^2\sin^2(a+bx)}{15d^3\sqrt{c+dx}} - \frac{\left(32b\right.}{}$$

$$= -\frac{16b^2}{15d^3\sqrt{c+dx}} - \frac{8b\cos(a+bx)\sin(a+bx)}{15d^2(c+dx)^{3/2}} - \frac{2\sin^2(a+bx)}{5d(c+dx)^{5/2}} + \frac{32b^2\sin^2(a+bx)}{15d^3\sqrt{c+dx}} - \frac{\left(64b\right.}{}$$

$$= -\frac{16b^2}{15d^3\sqrt{c+dx}} - \frac{32b^{5/2}\sqrt{\pi}\cos\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{15d^{7/2}} - \frac{32b^{5/2}\sqrt{\pi}\,C\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)\sin\left(2\right.}{15d^{7/2}}$$

Mathematica [A] time = 2.13, size = 244, normalized size = 1.13

$$-\frac{16b^2c^2\cos(2(a+bx)) + 32b^2cdx\cos(2(a+bx)) + 16b^2d^2x^2\cos(2(a+bx)) + 32\sqrt{\pi}\,bd\left(\frac{b}{d}\right)^{3/2}(c+dx)^{5/2}\sin\left(2a\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] -1/15*(3*d^2 + 16*b^2*c^2*Cos[2*(a + b*x)] - 3*d^2*Cos[2*(a + b*x)] + 32*b^
2*c*d*x*Cos[2*(a + b*x)] + 16*b^2*d^2*x^2*Cos[2*(a + b*x)] + 32*b*(b/d)^(3/
2)*d*Sqrt[Pi]*(c + d*x)^(5/2)*Cos[2*a - (2*b*c)/d]*FresnelS[(2*Sqrt[b/d]*Sq
rt[c + d*x])/Sqrt[Pi]] + 32*b*(b/d)^(3/2)*d*Sqrt[Pi]*(c + d*x)^(5/2)*Fresne
lC[(2*Sqrt[b/d]*Sqrt[c + d*x])/Sqrt[Pi]]*Sin[2*a - (2*b*c)/d] + 4*b*c*d*Sin
[2*(a + b*x)] + 4*b*d^2*x*Sin[2*(a + b*x)])/(d^3*(c + d*x)^(5/2))
```

fricas [A] time = 0.62, size = 328, normalized size = 1.52

$$-\frac{2\left(16\left(\pi b^2d^3x^3 + 3\pi b^2cd^2x^2 + 3\pi b^2c^2dx + \pi b^2c^3\right)\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{2(bc-ad)}{d}\right)S\left(2\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right) + 16\left(\pi b^2d^3x^3 + 3\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(16*(pi*b^2*d^3*x^3 + 3*pi*b^2*c*d^2*x^2 + 3*pi*b^2*c^2*d*x + pi*b^2*
c^3)*sqrt(b/(pi*d))*cos(-2*(b*c - a*d)/d)*fresnel_sin(2*sqrt(d*x + c)*sqrt(
b/(pi*d))) + 16*(pi*b^2*d^3*x^3 + 3*pi*b^2*c*d^2*x^2 + 3*pi*b^2*c^2*d*x + p
i*b^2*c^3)*sqrt(b/(pi*d))*fresnel_cos(2*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-
2*(b*c - a*d)/d) - (8*b^2*d^2*x^2 + 16*b^2*c*d*x + 8*b^2*c^2 - (16*b^2*d^2*
x^2 + 32*b^2*c*d*x + 16*b^2*c^2 - 3*d^2)*cos(b*x + a)^2 - 4*(b*d^2*x + b*c*
d)*cos(b*x + a)*sin(b*x + a) - 3*d^2)*sqrt(d*x + c))/(d^6*x^3 + 3*c*d^5*x^2
 + 3*c^2*d^4*x + c^3*d^3)
```

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

$$\int \frac{\sin(bx+a)^2}{(dx+c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^2/(d*x + c)^(7/2), x)
```

maple [A] time = 0.03, size = 230, normalized size = 1.06

$$\frac{-\frac{1}{5(dx+c)^{\frac{5}{2}}}+\frac{\cos\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{5(dx+c)^{\frac{5}{2}}}+\frac{4b\left(-\frac{\sin\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{3(dx+c)^{\frac{3}{2}}}+\frac{4b\left(-\frac{\cos\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{\sqrt{dx+c}}-\frac{2b\sqrt{\pi}\left(\cos\left(\frac{2da-2cb}{d}\right)\mathrm{S}\left(\frac{2\sqrt{dx+c}\,b}{\sqrt{\pi}\sqrt{\frac{b}{d}}\,d}\right)+\sin\left(\frac{2da-2cb}{d}\right)\mathrm{Fresne}\cdots\right)}{d\sqrt{\frac{b}{d}}}\right)}{3d}\right)}{5d}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*x+c)^(7/2),x)
```

```
[Out] 2/d*(-1/10/(d*x+c)^(5/2)+1/10/(d*x+c)^(5/2)*cos(2/d*(d*x+c)*b+2*(a*d-b*c)/d
)+2/5*b/d*(-1/3/(d*x+c)^(3/2)*sin(2/d*(d*x+c)*b+2*(a*d-b*c)/d)+4/3*b/d*(-1/
```

```
(d*x+c)^(1/2)*cos(2/d*(d*x+c)*b+2*(a*d-b*c)/d)-2*b/d*Pi^(1/2)/(b/d)^(1/2)*(
cos(2*(a*d-b*c)/d)*FresnelS(2/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)+sin(2
*(a*d-b*c)/d)*FresnelC(2/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d))))
```

maxima [C] time = 1.97, size = 135, normalized size = 0.62

$$\frac{\sqrt{2}\left(\left(-(5i+5)\sqrt{2}\,\Gamma\left(-\frac{5}{2},\frac{2i(dx+c)b}{d}\right)+(5i-5)\sqrt{2}\,\Gamma\left(-\frac{5}{2},-\frac{2i(dx+c)b}{d}\right)\right)\cos\left(-\frac{2(bc-ad)}{d}\right)+\left((5i-5)\sqrt{2}\,\Gamma\left(-\frac{5}{2},\frac{2i(dx}{d}\right.\right.\right.}{10(dx+c)^{\frac{5}{2}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(7/2),x, algorithm="maxima")
```

```
[Out] 1/10*(sqrt(2)*((-(5*I + 5)*sqrt(2)*gamma(-5/2, 2*I*(d*x + c)*b/d) + (5*I -
5)*sqrt(2)*gamma(-5/2, -2*I*(d*x + c)*b/d))*cos(-2*(b*c - a*d)/d) + ((5*I -
 5)*sqrt(2)*gamma(-5/2, 2*I*(d*x + c)*b/d) - (5*I + 5)*sqrt(2)*gamma(-5/2,
-2*I*(d*x + c)*b/d))*sin(-2*(b*c - a*d)/d))*((d*x + c)*b/d)^(5/2) - 2)/((d*
x + c)^(5/2)*d)
```

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

$$\int \frac{\sin(a+b\,x)^2}{(c+d\,x)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(c + d*x)^(7/2),x)
```

```
[Out] int(sin(a + b*x)^2/(c + d*x)^(7/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

3.52 $\int \frac{\sin^2(a+bx)}{(c+dx)^{9/2}}\,dx$

Optimal. Leaf size=247

$$-\frac{128\sqrt{\pi}\,b^{7/2}\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{105d^{9/2}}+\frac{128\sqrt{\pi}\,b^{7/2}\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{105d^{9/2}}+\frac{128b^3\sin(a+bx)\cos(a+b}{105d^4\sqrt{c+dx}}$$

```
[Out] -16/105*b^2/d^3/(d*x+c)^(3/2)-8/35*b*cos(b*x+a)*sin(b*x+a)/d^2/(d*x+c)^(5/2
)-2/7*sin(b*x+a)^2/d/(d*x+c)^(7/2)+32/105*b^2*sin(b*x+a)^2/d^3/(d*x+c)^(3/2
)-128/105*b^(7/2)*cos(2*a-2*b*c/d)*FresnelC(2*b^(1/2)*(d*x+c)^(1/2)/d^(1/2)
/Pi^(1/2))*Pi^(1/2)/d^(9/2)+128/105*b^(7/2)*FresnelS(2*b^(1/2)*(d*x+c)^(1/2
)/d^(1/2)/Pi^(1/2))*sin(2*a-2*b*c/d)*Pi^(1/2)/d^(9/2)+128/105*b^3*cos(b*x+a
)*sin(b*x+a)/d^4/(d*x+c)^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 247, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {3314, 32, 3312, 3306, 3305, 3351, 3304, 3352}

$$-\frac{128\sqrt{\pi}\,b^{7/2}\cos\left(2a-\frac{2bc}{d}\right)\text{FresnelC}\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{\pi}\,\sqrt{d}}\right)}{105d^{9/2}}+\frac{128\sqrt{\pi}\,b^{7/2}\sin\left(2a-\frac{2bc}{d}\right)S\left(\frac{2\sqrt{b}\,\sqrt{c+dx}}{\sqrt{d}\,\sqrt{\pi}}\right)}{105d^{9/2}}+\frac{32b^2\sin^2(a+bx)}{105d^3(c+dx)^{3/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^2/(c + d*x)^(9/2),x]
```

```
[Out] (-16*b^2)/(105*d^3*(c + d*x)^(3/2)) - (128*b^(7/2)*Sqrt[Pi]*Cos[2*a - (2*b*
c)/d]*FresnelC[(2*Sqrt[b]*Sqrt[c + d*x])/(Sqrt[d]*Sqrt[Pi])])/(105*d^(9/2))
 + (128*b^(7/2)*Sqrt[Pi]*FresnelS[(2*Sqrt[b]*Sqrt[c + d*x])/(Sqrt[d]*Sqrt[P
i])]*Sin[2*a - (2*b*c)/d])/(105*d^(9/2)) - (8*b*Cos[a + b*x]*Sin[a + b*x])/
(35*d^2*(c + d*x)^(5/2)) + (128*b^3*Cos[a + b*x]*Sin[a + b*x])/(105*d^4*Sqr
t[c + d*x]) - (2*Sin[a + b*x]^2)/(7*d*(c + d*x)^(7/2)) + (32*b^2*Sin[a + b*
x]^2)/(105*d^3*(c + d*x)^(3/2))
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
```

```
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin^2(a+bx)}{(c+dx)^{9/2}}\,dx = -\frac{8b\cos(a+bx)\sin(a+bx)}{35d^2(c+dx)^{5/2}} - \frac{2\sin^2(a+bx)}{7d(c+dx)^{7/2}} + \frac{\left(8b^2\right)\int \frac{1}{(c+dx)^{5/2}}\,dx}{35d^2} - \frac{\left(16b^2\right)\int \frac{\sin^2(a+bx)}{(c+dx)^{5/2}}\,dx}{35d^2}$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} - \frac{8b\cos(a+bx)\sin(a+bx)}{35d^2(c+dx)^{5/2}} + \frac{128b^3\cos(a+bx)\sin(a+bx)}{105d^4\sqrt{c+dx}} - \frac{2\sin^2(a}{7d(c+d}$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} - \frac{256b^4\sqrt{c+dx}}{105d^5} - \frac{8b\cos(a+bx)\sin(a+bx)}{35d^2(c+dx)^{5/2}} + \frac{128b^3\cos(a+bx)\sin(a}{105d^4\sqrt{c+dx}}$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} - \frac{8b\cos(a+bx)\sin(a+bx)}{35d^2(c+dx)^{5/2}} + \frac{128b^3\cos(a+bx)\sin(a+bx)}{105d^4\sqrt{c+dx}} - \frac{2\sin^2(a}{7d(c+d}$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} - \frac{8b\cos(a+bx)\sin(a+bx)}{35d^2(c+dx)^{5/2}} + \frac{128b^3\cos(a+bx)\sin(a+bx)}{105d^4\sqrt{c+dx}} - \frac{2\sin^2(a}{7d(c+d}$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} - \frac{8b\cos(a+bx)\sin(a+bx)}{35d^2(c+dx)^{5/2}} + \frac{128b^3\cos(a+bx)\sin(a+bx)}{105d^4\sqrt{c+dx}} - \frac{2\sin^2(a}{7d(c+d}$$

$$= -\frac{16b^2}{105d^3(c+dx)^{3/2}} - \frac{128b^{7/2}\sqrt{\pi}\cos\left(2a-\frac{2bc}{d}\right)C\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)}{105d^{9/2}} + \frac{128b^{7/2}\sqrt{\pi}\,S\left(\frac{2\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{\pi}}\right)\mathrm{si}}{105d^{9/2}}$$

Mathematica [B] time = 4.84, size = 661, normalized size = 2.68

$$\frac{\cos(2a)\left(2\cos\left(\frac{2bc}{d}\right)\left(15d^3\cos\left(\frac{2b(c+dx)}{d}\right)-4b(c+dx)\left(3d^2\sin\left(\frac{2b(c+dx)}{d}\right)+4b(c+dx)\left(8\sqrt{\pi}\,b\sqrt{\frac{b}{d}}\,(c+dx)^{3/2}C\left(\frac{2\sqrt{}}{}\right.\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^2/(c + d*x)^(9/2),x]
```

```
[Out] (-30*d^3 + Cos[2*a]*(4*Cos[(b*c)/d]*Sin[(b*c)/d]*(15*d^3*Sin[(2*b*(c + d*x)
)/d] + 4*b*(c + d*x)*(3*d^2*Cos[(2*b*(c + d*x))/d] - 4*b*(c + d*x)*(4*b*(c
+ d*x)*Cos[(2*b*(c + d*x))/d] + 8*b*Sqrt[b/d]*Sqrt[Pi]*(c + d*x)^(3/2)*Fres
nelS[(2*Sqrt[b/d]*Sqrt[c + d*x])/Sqrt[Pi]] + d*Sin[(2*b*(c + d*x))/d]))) +
2*Cos[(2*b*c)/d]*(15*d^3*Cos[(2*b*(c + d*x))/d] - 4*b*(c + d*x)*(3*d^2*Sin[
(2*b*(c + d*x))/d] + 4*b*(c + d*x)*(d*Cos[(2*b*(c + d*x))/d] + 8*b*Sqrt[b/d
]*Sqrt[Pi]*(c + d*x)^(3/2)*FresnelC[(2*Sqrt[b/d]*Sqrt[c + d*x])/Sqrt[Pi]] -
 4*b*(c + d*x)*Sin[(2*b*(c + d*x))/d])))) - 2*Cos[a]*Sin[a]*(2*(Cos[(b*c)/d
```

```
] - Sin[(b*c)/d])*(Cos[(b*c)/d] + Sin[(b*c)/d])*(15*d^3*Sin[(2*b*(c + d*x))
/d] + 4*b*(c + d*x)*(3*d^2*Cos[(2*b*(c + d*x))/d] - 4*b*(c + d*x)*(4*b*(c +
 d*x)*Cos[(2*b*(c + d*x))/d] + 8*b*Sqrt[b/d]*Sqrt[Pi]*(c + d*x)^(3/2)*Fresn
elS[(2*Sqrt[b/d]*Sqrt[c + d*x])/Sqrt[Pi]] + d*Sin[(2*b*(c + d*x))/d]))) - 2
*Sin[(2*b*c)/d]*(15*d^3*Cos[(2*b*(c + d*x))/d] - 4*b*(c + d*x)*(3*d^2*Sin[(
2*b*(c + d*x))/d] + 4*b*(c + d*x)*(d*Cos[(2*b*(c + d*x))/d] + 8*b*Sqrt[b/d]
*Sqrt[Pi]*(c + d*x)^(3/2)*FresnelC[(2*Sqrt[b/d]*Sqrt[c + d*x])/Sqrt[Pi]] -
4*b*(c + d*x)*Sin[(2*b*(c + d*x))/d])))))/(210*d^4*(c + d*x)^(7/2))
```

fricas [B] time = 0.85, size = 422, normalized size = 1.71

$$-\frac{2\left(64\left(\pi b^3 d^4 x^4 + 4\,\pi b^3 c d^3 x^3 + 6\,\pi b^3 c^2 d^2 x^2 + 4\,\pi b^3 c^3 d x + \pi b^3 c^4\right)\sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{2\,(bc-ad)}{d}\right) C\left(2\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right) - \cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(64*(pi*b^3*d^4*x^4 + 4*pi*b^3*c*d^3*x^3 + 6*pi*b^3*c^2*d^2*x^2 + 4*
pi*b^3*c^3*d*x + pi*b^3*c^4)*sqrt(b/(pi*d))*cos(-2*(b*c - a*d)/d)*fresnel_c
os(2*sqrt(d*x + c)*sqrt(b/(pi*d))) - 64*(pi*b^3*d^4*x^4 + 4*pi*b^3*c*d^3*x^
3 + 6*pi*b^3*c^2*d^2*x^2 + 4*pi*b^3*c^3*d*x + pi*b^3*c^4)*sqrt(b/(pi*d))*fr
esnel_sin(2*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-2*(b*c - a*d)/d) - (8*b^2*d^
3*x^2 + 16*b^2*c*d^2*x + 8*b^2*c^2*d - 15*d^3 - (16*b^2*d^3*x^2 + 32*b^2*c*
d^2*x + 16*b^2*c^2*d - 15*d^3)*cos(b*x + a)^2 + 4*(16*b^3*d^3*x^3 + 48*b^3*
c*d^2*x^2 + 16*b^3*c^3 - 3*b*c*d^2 + 3*(16*b^3*c^2*d - b*d^3)*x)*cos(b*x +
a)*sin(b*x + a))*sqrt(d*x + c))/(d^8*x^4 + 4*c*d^7*x^3 + 6*c^2*d^6*x^2 + 4*
c^3*d^5*x + c^4*d^4)
```

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

$$\int \frac{\sin(bx+a)^2}{(dx+c)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(9/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^2/(d*x + c)^(9/2), x)
```

maple [A] time = 0.03, size = 273, normalized size = 1.11

$$\frac{-\frac{1}{7(dx+c)^{\frac{7}{2}}}+\frac{\cos\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{7(dx+c)^{\frac{7}{2}}}+\frac{4b\left(-\frac{\sin\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{5(dx+c)^{\frac{5}{2}}}+\frac{4b\left(-\frac{\cos\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{3(dx+c)^{\frac{3}{2}}}-\frac{4b\left(-\frac{\sin\left(\frac{2(dx+c)b}{d}+\frac{2da-2cb}{d}\right)}{\sqrt{dx+c}}+\frac{2b\sqrt{\pi}\left(\cos\left(\frac{2da-2cb}{d}\right)\mathrm{Fres}\right.}{}\right.}{3d}\right.}{5d}\right.}{7d}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^2/(d*x+c)^(9/2),x)
```

```
[Out] 2/d*(-1/14/(d*x+c)^(7/2)+1/14/(d*x+c)^(7/2)*cos(2/d*(d*x+c)*b+2*(a*d-b*c)/d
)+2/7*b/d*(-1/5/(d*x+c)^(5/2)*sin(2/d*(d*x+c)*b+2*(a*d-b*c)/d)+4/5*b/d*(-1/
3/(d*x+c)^(3/2)*cos(2/d*(d*x+c)*b+2*(a*d-b*c)/d)-4/3*b/d*(-1/(d*x+c)^(1/2)*
sin(2/d*(d*x+c)*b+2*(a*d-b*c)/d)+2*b/d*Pi^(1/2)/(b/d)^(1/2)*(cos(2*(a*d-b*c
)/d)*FresnelC(2/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)-sin(2*(a*d-b*c)/d)*
FresnelS(2/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)))))
```

maxima [C] time = 1.05, size = 135, normalized size = 0.55

$$-\frac{\sqrt{2}\left(\left(\left(7i-7\right)\sqrt{2}\,\Gamma\left(-\frac{7}{2},\frac{2i\,(dx+c)b}{d}\right)-\left(7i+7\right)\sqrt{2}\,\Gamma\left(-\frac{7}{2},-\frac{2i\,(dx+c)b}{d}\right)\right)\cos\left(-\frac{2\,(bc-ad)}{d}\right)+\left(\left(7i+7\right)\sqrt{2}\,\Gamma\left(-\frac{7}{2},\frac{2i\,(dx+c}{d}\right.\right.\right.}{7\,(dx+c)^{\frac{7}{2}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^2/(d*x+c)^(9/2),x, algorithm="maxima")
```

```
[Out] -1/7*(sqrt(2)*(((7*I - 7)*sqrt(2)*gamma(-7/2, 2*I*(d*x + c)*b/d) - (7*I + 7
)*sqrt(2)*gamma(-7/2, -2*I*(d*x + c)*b/d))*cos(-2*(b*c - a*d)/d) + ((7*I +
7)*sqrt(2)*gamma(-7/2, 2*I*(d*x + c)*b/d) - (7*I - 7)*sqrt(2)*gamma(-7/2, -
2*I*(d*x + c)*b/d))*sin(-2*(b*c - a*d)/d))*((d*x + c)*b/d)^(7/2) + 1)/((d*x
 + c)^(7/2)*d)
```

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

$$\int \frac{\sin(a+bx)^2}{(c+dx)^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2/(c + d*x)^(9/2),x)
```

```
[Out] int(sin(a + b*x)^2/(c + d*x)^(9/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**2/(d*x+c)**(9/2),x)
```

```
[Out] Timed out
```

3.53 $\int (c+dx)^{5/2}\sin^3(a+bx)\,dx$

Optimal. Leaf size=410

$$-\frac{45\sqrt{\frac{\pi}{2}}\,d^{5/2}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{7/2}}+\frac{5\sqrt{\frac{\pi}{6}}\,d^{5/2}\cos\left(3a-\frac{3bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{144b^{7/2}}-\frac{5\sqrt{\frac{\pi}{6}}\,d^{5/2}\sin\left(3a-\frac{3bc}{d}\right)S\left(\right.}{144b^{7/2}}$$

```
[Out] -2/3*(d*x+c)^(5/2)*cos(b*x+a)/b+5/3*d*(d*x+c)^(3/2)*sin(b*x+a)/b^2-1/3*(d*x
+c)^(5/2)*cos(b*x+a)*sin(b*x+a)^2/b+5/18*d*(d*x+c)^(3/2)*sin(b*x+a)^3/b^2+5
/864*d^(5/2)*cos(3*a-3*b*c/d)*FresnelC(b^(1/2)*6^(1/2)/Pi^(1/2)*(d*x+c)^(1/
2)/d^(1/2))*6^(1/2)*Pi^(1/2)/b^(7/2)-5/864*d^(5/2)*FresnelS(b^(1/2)*6^(1/2)
/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*sin(3*a-3*b*c/d)*6^(1/2)*Pi^(1/2)/b^(7/2)-
45/32*d^(5/2)*cos(a-b*c/d)*FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/
d^(1/2))*2^(1/2)*Pi^(1/2)/b^(7/2)+45/32*d^(5/2)*FresnelS(b^(1/2)*2^(1/2)/Pi
^(1/2)*(d*x+c)^(1/2)/d^(1/2))*sin(a-b*c/d)*2^(1/2)*Pi^(1/2)/b^(7/2)+45/16*d
^2*cos(b*x+a)*(d*x+c)^(1/2)/b^3-5/144*d^2*cos(3*b*x+3*a)*(d*x+c)^(1/2)/b^3
```

Rubi [A] time = 1.13, antiderivative size = 410, normalized size of antiderivative = 1.00, number of steps used = 23, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {3311, 3296, 3306, 3305, 3351, 3304, 3352, 3312}

$$-\frac{45\sqrt{\frac{\pi}{2}}\,d^{5/2}\cos\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{16b^{7/2}}+\frac{5\sqrt{\frac{\pi}{6}}\,d^{5/2}\cos\left(3a-\frac{3bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{144b^{7/2}}-\frac{5\sqrt{\frac{\pi}{6}}\,d^{5/2}\,\text{s}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^(5/2)*Sin[a + b*x]^3,x]
```

```
[Out] (45*d^2*Sqrt[c + d*x]*Cos[a + b*x])/(16*b^3) - (2*(c + d*x)^(5/2)*Cos[a + b
*x])/(3*b) - (5*d^2*Sqrt[c + d*x]*Cos[3*a + 3*b*x])/(144*b^3) - (45*d^(5/2)
*Sqrt[Pi/2]*Cos[a - (b*c)/d]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sq
rt[d]])/(16*b^(7/2)) + (5*d^(5/2)*Sqrt[Pi/6]*Cos[3*a - (3*b*c)/d]*FresnelC[
(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]])/(144*b^(7/2)) - (5*d^(5/2)*Sqr
t[Pi/6]*FresnelS[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[3*a - (3*b
*c)/d])/(144*b^(7/2)) + (45*d^(5/2)*Sqrt[Pi/2]*FresnelS[(Sqrt[b]*Sqrt[2/Pi]
*Sqrt[c + d*x])/Sqrt[d]]*Sin[a - (b*c)/d])/(16*b^(7/2)) + (5*d*(c + d*x)^(3
/2)*Sin[a + b*x])/(3*b^2) - ((c + d*x)^(5/2)*Cos[a + b*x]*Sin[a + b*x]^2)/(
3*b) + (5*d*(c + d*x)^(3/2)*Sin[a + b*x]^3)/(18*b^2)
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (c+dx)^{5/2}\sin^3(a+bx)\,dx = -\frac{(c+dx)^{5/2}\cos(a+bx)\sin^2(a+bx)}{3b} + \frac{5d(c+dx)^{3/2}\sin^3(a+bx)}{18b^2} + \frac{2}{3}\int (c+dx)$$

$$= -\frac{2(c+dx)^{5/2}\cos(a+bx)}{3b} - \frac{(c+dx)^{5/2}\cos(a+bx)\sin^2(a+bx)}{3b} + \frac{5d(c+dx)^{3/2}\,\mathrm{s}}{18b^2}$$

$$= -\frac{2(c+dx)^{5/2}\cos(a+bx)}{3b} + \frac{5d(c+dx)^{3/2}\sin(a+bx)}{3b^2} - \frac{(c+dx)^{5/2}\cos(a+bx)\,\mathrm{si}}{3b}$$

$$= \frac{45d^2\sqrt{c+dx}\,\cos(a+bx)}{16b^3} - \frac{2(c+dx)^{5/2}\cos(a+bx)}{3b} - \frac{5d^2\sqrt{c+dx}\,\cos(3a+3bx}{144b^3}$$

$$= \frac{45d^2\sqrt{c+dx}\,\cos(a+bx)}{16b^3} - \frac{2(c+dx)^{5/2}\cos(a+bx)}{3b} - \frac{5d^2\sqrt{c+dx}\,\cos(3a+3bx}{144b^3}$$

$$= \frac{45d^2\sqrt{c+dx}\,\cos(a+bx)}{16b^3} - \frac{2(c+dx)^{5/2}\cos(a+bx)}{3b} - \frac{5d^2\sqrt{c+dx}\,\cos(3a+3bx}{144b^3}$$

$$= \frac{45d^2\sqrt{c+dx}\,\cos(a+bx)}{16b^3} - \frac{2(c+dx)^{5/2}\cos(a+bx)}{3b} - \frac{5d^2\sqrt{c+dx}\,\cos(3a+3bx}{144b^3}$$

Mathematica [A] time = 3.31, size = 542, normalized size = 1.32

$$\frac{-648b^3c^2\sqrt{c+dx}\,\cos(a+bx) + 72b^3c^2\sqrt{c+dx}\,\cos(3(a+bx)) - 648b^3d^2x^2\sqrt{c+dx}\,\cos(a+bx) + 72b^3d^2x^2\sqrt{c\cdot}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^(5/2)*Sin[a + b*x]^3,x]
```

```
[Out] (-648*b^3*c^2*Sqrt[c + d*x]*Cos[a + b*x] + 2430*b*d^2*Sqrt[c + d*x]*Cos[a +
 b*x] - 1296*b^3*c*d*x*Sqrt[c + d*x]*Cos[a + b*x] - 648*b^3*d^2*x^2*Sqrt[c
+ d*x]*Cos[a + b*x] + 72*b^3*c^2*Sqrt[c + d*x]*Cos[3*(a + b*x)] - 30*b*d^2*
Sqrt[c + d*x]*Cos[3*(a + b*x)] + 144*b^3*c*d*x*Sqrt[c + d*x]*Cos[3*(a + b*x
)] + 72*b^3*d^2*x^2*Sqrt[c + d*x]*Cos[3*(a + b*x)] - 1215*Sqrt[b/d]*d^3*Sqr
t[2*Pi]*Cos[a - (b*c)/d]*FresnelC[Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c + d*x]] + 5*S
qrt[b/d]*d^3*Sqrt[6*Pi]*Cos[3*a - (3*b*c)/d]*FresnelC[Sqrt[b/d]*Sqrt[6/Pi]*
Sqrt[c + d*x]] - 5*Sqrt[b/d]*d^3*Sqrt[6*Pi]*FresnelS[Sqrt[b/d]*Sqrt[6/Pi]*S
```

```
qrt[c + d*x]]*Sin[3*a - (3*b*c)/d] + 1215*Sqrt[b/d]*d^3*Sqrt[2*Pi]*FresnelS
[Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c + d*x]]*Sin[a - (b*c)/d] + 1620*b^2*c*d*Sqrt[c
 + d*x]*Sin[a + b*x] + 1620*b^2*d^2*x*Sqrt[c + d*x]*Sin[a + b*x] - 60*b^2*c
*d*Sqrt[c + d*x]*Sin[3*(a + b*x)] - 60*b^2*d^2*x*Sqrt[c + d*x]*Sin[3*(a + b
*x)])/(864*b^4)
```

fricas [A] time = 0.92, size = 371, normalized size = 0.90

$$5\sqrt{6}\,\pi d^3\sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{3\,(bc-ad)}{d}\right)C\left(\sqrt{6}\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right)-1215\,\sqrt{2}\,\pi d^3\sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{bc-ad}{d}\right)C\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right)+1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/864*(5*sqrt(6)*pi*d^3*sqrt(b/(pi*d))*cos(-3*(b*c - a*d)/d)*fresnel_cos(sq
rt(6)*sqrt(d*x + c)*sqrt(b/(pi*d))) - 1215*sqrt(2)*pi*d^3*sqrt(b/(pi*d))*co
s(-(b*c - a*d)/d)*fresnel_cos(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d))) + 1215*
sqrt(2)*pi*d^3*sqrt(b/(pi*d))*fresnel_sin(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*
d)))*sin(-(b*c - a*d)/d) - 5*sqrt(6)*pi*d^3*sqrt(b/(pi*d))*fresnel_sin(sqrt
(6)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-3*(b*c - a*d)/d) + 24*((12*b^3*d^2*x
^2 + 24*b^3*c*d*x + 12*b^3*c^2 - 5*b*d^2)*cos(b*x + a)^3 - 3*(12*b^3*d^2*x^
2 + 24*b^3*c*d*x + 12*b^3*c^2 - 35*b*d^2)*cos(b*x + a) + 10*(7*b^2*d^2*x +
7*b^2*c*d - (b^2*d^2*x + b^2*c*d)*cos(b*x + a)^2)*sin(b*x + a))*sqrt(d*x +
c))/b^4
```

giac [C] time = 2.77, size = 2465, normalized size = 6.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/1728*(72*(-I*sqrt(6)*sqrt(pi)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x + c)
*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((3*I*b*c - 3*I*a*d)/d)/(sqrt(b*d)*(I*b*d/s
qrt(b^2*d^2) + 1)) + 9*I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt
(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*
b*d/sqrt(b^2*d^2) + 1)) - 9*I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)
*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b
*d)*(-I*b*d/sqrt(b^2*d^2) + 1)) + I*sqrt(6)*sqrt(pi)*d*erf(-1/2*sqrt(6)*sqr
t(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-3*I*b*c + 3*I*a*d)/
d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)))*c^3 + 18*c*d^2*((-I*sqrt(6)*sqrt
(pi)*(12*b^2*c^2 + 4*I*b*c*d - d^2)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x +
 c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((3*I*b*c - 3*I*a*d)/d)/(sqrt(b*d)*(I*b*
d/sqrt(b^2*d^2) + 1)*b^2) - 6*I*(-2*I*(d*x + c)^(3/2)*b*d + 4*I*sqrt(d*x +
```

c)*b*c*d - sqrt(d*x + c)*d^2)*e^((-3*I*(d*x + c)*b + 3*I*b*c - 3*I*a*d)/d)/
b^2)/d^2 + 9*(3*I*sqrt(2)*sqrt(pi)*(4*b^2*c^2 + 4*I*b*c*d - 3*d^2)*d*erf(-1
/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c -
I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b^2) - 2*I*(6*I*(d*x + c)^(
3/2)*b*d - 12*I*sqrt(d*x + c)*b*c*d + 9*sqrt(d*x + c)*d^2)*e^((-I*(d*x + c)
*b + I*b*c - I*a*d)/d)/b^2)/d^2 + 9*(-3*I*sqrt(2)*sqrt(pi)*(4*b^2*c^2 - 4*I
*b*c*d - 3*d^2)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2
*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*
b^2) - 2*I*(6*I*(d*x + c)^(3/2)*b*d - 12*I*sqrt(d*x + c)*b*c*d - 9*sqrt(d*x
+ c)*d^2)*e^((I*(d*x + c)*b - I*b*c + I*a*d)/d)/b^2)/d^2 + (I*sqrt(6)*sqrt
(pi)*(12*b^2*c^2 - 4*I*b*c*d - d^2)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x +
c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-3*I*b*c + 3*I*a*d)/d)/(sqrt(b*d)*(-I
*b*d/sqrt(b^2*d^2) + 1)*b^2) - 6*I*(-2*I*(d*x + c)^(3/2)*b*d + 4*I*sqrt(d*x
+ c)*b*c*d + sqrt(d*x + c)*d^2)*e^((3*I*(d*x + c)*b - 3*I*b*c + 3*I*a*d)/d
)/b^2)/d^2) + d^3*((I*sqrt(6)*sqrt(pi)*(72*b^3*c^3 + 36*I*b^2*c^2*d - 18*b*
c*d^2 - 5*I*d^3)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2
*d^2) + 1)/d)*e^((3*I*b*c - 3*I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1
)*b^3) - 6*I*(-12*I*(d*x + c)^(5/2)*b^2*d + 36*I*(d*x + c)^(3/2)*b^2*c*d -
36*I*sqrt(d*x + c)*b^2*c^2*d - 10*(d*x + c)^(3/2)*b*d^2 + 18*sqrt(d*x + c)*
b*c*d^2 + 5*I*sqrt(d*x + c)*d^3)*e^((-3*I*(d*x + c)*b + 3*I*b*c - 3*I*a*d)/
d)/b^3)/d^3 + 27*(-I*sqrt(2)*sqrt(pi)*(24*b^3*c^3 + 36*I*b^2*c^2*d - 54*b*c
*d^2 - 45*I*d^3)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2
*d^2) + 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b^
3) - 2*I*(12*I*(d*x + c)^(5/2)*b^2*d - 36*I*(d*x + c)^(3/2)*b^2*c*d + 36*I*
sqrt(d*x + c)*b^2*c^2*d + 30*(d*x + c)^(3/2)*b*d^2 - 54*sqrt(d*x + c)*b*c*d
^2 - 45*I*sqrt(d*x + c)*d^3)*e^((-I*(d*x + c)*b + I*b*c - I*a*d)/d)/b^3)/d^
3 + 27*(I*sqrt(2)*sqrt(pi)*(24*b^3*c^3 - 36*I*b^2*c^2*d - 54*b*c*d^2 + 45*I
*d^3)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)
/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b^3) - 2*I
*(12*I*(d*x + c)^(5/2)*b^2*d - 36*I*(d*x + c)^(3/2)*b^2*c*d + 36*I*sqrt(d*x
+ c)*b^2*c^2*d - 30*(d*x + c)^(3/2)*b*d^2 + 54*sqrt(d*x + c)*b*c*d^2 - 45*
I*sqrt(d*x + c)*d^3)*e^((I*(d*x + c)*b - I*b*c + I*a*d)/d)/b^3)/d^3 + (-I*s
qrt(6)*sqrt(pi)*(72*b^3*c^3 - 36*I*b^2*c^2*d - 18*b*c*d^2 + 5*I*d^3)*d*erf(
-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-3*I
*b*c + 3*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b^3) - 6*I*(-12*I*
(d*x + c)^(5/2)*b^2*d + 36*I*(d*x + c)^(3/2)*b^2*c*d - 36*I*sqrt(d*x + c)*b
^2*c^2*d + 10*(d*x + c)^(3/2)*b*d^2 - 18*sqrt(d*x + c)*b*c*d^2 + 5*I*sqrt(d
*x + c)*d^3)*e^((3*I*(d*x + c)*b - 3*I*b*c + 3*I*a*d)/d)/b^3)/d^3) + 36*(I*
sqrt(6)*sqrt(pi)*(6*b*c + I*d)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x + c)*(
I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((3*I*b*c - 3*I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqr
t(b^2*d^2) + 1)*b) - 9*I*sqrt(2)*sqrt(pi)*(6*b*c + 3*I*d)*d*erf(-1/2*sqrt(2
)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a*d)/d
)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b) + 9*I*sqrt(2)*sqrt(pi)*(6*b*c - 3
*I*d)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)
/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b) - I*sqr

```
t(6)*sqrt(pi)*(6*b*c - I*d)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x + c)*(-I*
b*d/sqrt(b^2*d^2) + 1)/d)*e^((-3*I*b*c + 3*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqr
t(b^2*d^2) + 1)*b) - 6*sqrt(d*x + c)*d*e^((3*I*(d*x + c)*b - 3*I*b*c + 3*I*
a*d)/d)/b + 54*sqrt(d*x + c)*d*e^((I*(d*x + c)*b - I*b*c + I*a*d)/d)/b + 54
*sqrt(d*x + c)*d*e^((-I*(d*x + c)*b + I*b*c - I*a*d)/d)/b - 6*sqrt(d*x + c)
*d*e^((-3*I*(d*x + c)*b + 3*I*b*c - 3*I*a*d)/d)/b)*c^2)/d
```

maple [A] time = 0.03, size = 476, normalized size = 1.16

$$-\frac{-\frac{3d(dx+c)^{\frac{5}{2}}\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{4b}+\frac{15d\left(\frac{d(dx+c)^{\frac{3}{2}}\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{2b}-\frac{3d\left(-\frac{d\sqrt{dx+c}\,\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{2b}+\frac{d\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)-\mathrm{si}\cdots\right.}{4b\sqrt{\frac{b}{d}}}\cdots\right.}{2b}\cdots\right.}{4b}\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(5/2)*sin(b*x+a)^3,x)
```

```
[Out] 2/d*(-3/8/b*d*(d*x+c)^(5/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)+15/8/b*d*(1/2/b*
d*(d*x+c)^(3/2)*sin(1/d*(d*x+c)*b+(a*d-b*c)/d)-3/2/b*d*(-1/2/b*d*(d*x+c)^(1
/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)+1/4/b*d*2^(1/2)*Pi^(1/2)/(b/d)^(1/2)*(co
s((a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)-sin
((a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d))))+1
/24/b*d*(d*x+c)^(5/2)*cos(3/d*(d*x+c)*b+3*(a*d-b*c)/d)-5/24/b*d*(1/6/b*d*(d
*x+c)^(3/2)*sin(3/d*(d*x+c)*b+3*(a*d-b*c)/d)-1/2/b*d*(-1/6/b*d*(d*x+c)^(1/2
)*cos(3/d*(d*x+c)*b+3*(a*d-b*c)/d)+1/36/b*d*2^(1/2)*Pi^(1/2)*3^(1/2)/(b/d)^
(1/2)*(cos(3*(a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(d*
x+c)^(1/2)*b/d)-sin(3*(a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^
(1/2)*(d*x+c)^(1/2)*b/d)))))
```

maxima [C] time = 0.54, size = 543, normalized size = 1.32

$$-\frac{\left(240\,(dx+c)^{\frac{3}{2}}b^3\sin\left(\frac{3\,((dx+c)b-bc+ad)}{d}\right)-6480\,(dx+c)^{\frac{3}{2}}b^3\sin\left(\frac{(dx+c)b-bc+ad}{d}\right)-24\left(\frac{12\,(dx+c)^{\frac{5}{2}}b^4}{d}-5\,\sqrt{dx+c}\,b^2d\right)\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(5/2)*sin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/3456*(240*(d*x + c)^(3/2)*b^3*sin(3*((d*x + c)*b - b*c + a*d)/d) - 6480*
(d*x + c)^(3/2)*b^3*sin(((d*x + c)*b - b*c + a*d)/d) - 24*(12*(d*x + c)^(5/
2)*b^4/d - 5*sqrt(d*x + c)*b^2*d)*cos(3*((d*x + c)*b - b*c + a*d)/d) + 648*
(4*(d*x + c)^(5/2)*b^4/d - 15*sqrt(d*x + c)*b^2*d)*cos(((d*x + c)*b - b*c +
 a*d)/d) + ((5*I - 5)*9^(1/4)*sqrt(2)*sqrt(pi)*b*d^2*(b^2/d^2)^(1/4)*cos(-3
*(b*c - a*d)/d) + (5*I + 5)*9^(1/4)*sqrt(2)*sqrt(pi)*b*d^2*(b^2/d^2)^(1/4)*
sin(-3*(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(3*I*b/d)) + (-(1215*I - 1215)
*sqrt(2)*sqrt(pi)*b*d^2*(b^2/d^2)^(1/4)*cos(-(b*c - a*d)/d) - (1215*I + 121
5)*sqrt(2)*sqrt(pi)*b*d^2*(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d))*erf(sqrt(d*x
 + c)*sqrt(I*b/d)) + ((1215*I + 1215)*sqrt(2)*sqrt(pi)*b*d^2*(b^2/d^2)^(1/4
)*cos(-(b*c - a*d)/d) + (1215*I - 1215)*sqrt(2)*sqrt(pi)*b*d^2*(b^2/d^2)^(1
/4)*sin(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(-I*b/d)) + (-(5*I + 5)*9^(1
/4)*sqrt(2)*sqrt(pi)*b*d^2*(b^2/d^2)^(1/4)*cos(-3*(b*c - a*d)/d) - (5*I - 5
)*9^(1/4)*sqrt(2)*sqrt(pi)*b*d^2*(b^2/d^2)^(1/4)*sin(-3*(b*c - a*d)/d))*erf
(sqrt(d*x + c)*sqrt(-3*I*b/d)))*d/b^5
```

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

$$\int \sin(a+bx)^3 (c+dx)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(c + d*x)^(5/2),x)
```

```
[Out] int(sin(a + b*x)^3*(c + d*x)^(5/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(5/2)*sin(b*x+a)**3,x)
```

```
[Out] Timed out
```

3.54 $\int (c+dx)^{3/2}\sin^3(a+bx)\,dx$

Optimal. Leaf size=354

$$\frac{\sqrt{\frac{\pi}{6}}\,d^{3/2}\sin\left(3a-\frac{3bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{24b^{5/2}}-\frac{9\sqrt{\frac{\pi}{2}}\,d^{3/2}\sin\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{8b^{5/2}}-\frac{9\sqrt{\frac{\pi}{2}}\,d^{3/2}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\cdots}}{\cdots}\right.}{8b^{5/2}}$$

```
[Out] -2/3*(d*x+c)^(3/2)*cos(b*x+a)/b-1/3*(d*x+c)^(3/2)*cos(b*x+a)*sin(b*x+a)^2/b
+1/144*d^(3/2)*cos(3*a-3*b*c/d)*FresnelS(b^(1/2)*6^(1/2)/Pi^(1/2)*(d*x+c)^(
1/2)/d^(1/2))*6^(1/2)*Pi^(1/2)/b^(5/2)+1/144*d^(3/2)*FresnelC(b^(1/2)*6^(1/
2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*sin(3*a-3*b*c/d)*6^(1/2)*Pi^(1/2)/b^(5/2
)-9/16*d^(3/2)*cos(a-b*c/d)*FresnelS(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)
/d^(1/2))*2^(1/2)*Pi^(1/2)/b^(5/2)-9/16*d^(3/2)*FresnelC(b^(1/2)*2^(1/2)/Pi
^(1/2)*(d*x+c)^(1/2)/d^(1/2))*sin(a-b*c/d)*2^(1/2)*Pi^(1/2)/b^(5/2)+d*sin(b
*x+a)*(d*x+c)^(1/2)/b^2+1/6*d*sin(b*x+a)^3*(d*x+c)^(1/2)/b^2
```

Rubi [A] time = 0.97, antiderivative size = 354, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {3311, 3296, 3306, 3305, 3351, 3304, 3352, 3312}

$$\frac{\sqrt{\frac{\pi}{6}}\,d^{3/2}\sin\left(3a-\frac{3bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{24b^{5/2}}-\frac{9\sqrt{\frac{\pi}{2}}\,d^{3/2}\sin\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{8b^{5/2}}-\frac{9\sqrt{\frac{\pi}{2}}\,d^{3/2}\cos\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^(3/2)*Sin[a + b*x]^3,x]
```

```
[Out] (-2*(c + d*x)^(3/2)*Cos[a + b*x])/(3*b) - (9*d^(3/2)*Sqrt[Pi/2]*Cos[a - (b*
c)/d]*FresnelS[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]])/(8*b^(5/2)) + (
d^(3/2)*Sqrt[Pi/6]*Cos[3*a - (3*b*c)/d]*FresnelS[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c
 + d*x])/Sqrt[d]])/(24*b^(5/2)) + (d^(3/2)*Sqrt[Pi/6]*FresnelC[(Sqrt[b]*Sqr
t[6/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[3*a - (3*b*c)/d])/(24*b^(5/2)) - (9*d^(
3/2)*Sqrt[Pi/2]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[a
- (b*c)/d])/(8*b^(5/2)) + (d*Sqrt[c + d*x]*Sin[a + b*x])/b^2 - ((c + d*x)^(
3/2)*Cos[a + b*x]*Sin[a + b*x]^2)/(3*b) + (d*Sqrt[c + d*x]*Sin[a + b*x]^3)/
(6*b^2)
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (c+dx)^{3/2}\sin^3(a+bx)\,dx = -\frac{(c+dx)^{3/2}\cos(a+bx)\sin^2(a+bx)}{3b}+\frac{d\sqrt{c+dx}\,\sin^3(a+bx)}{6b^2}+\frac{2}{3}\int (c+dx)^{3/}$$

$$= -\frac{2(c+dx)^{3/2}\cos(a+bx)}{3b}-\frac{(c+dx)^{3/2}\cos(a+bx)\sin^2(a+bx)}{3b}+\frac{d\sqrt{c+dx}\,\sin}{6b^2}$$

$$= -\frac{2(c+dx)^{3/2}\cos(a+bx)}{3b}+\frac{d\sqrt{c+dx}\,\sin(a+bx)}{b^2}-\frac{(c+dx)^{3/2}\cos(a+bx)\sin^2}{3b}$$

$$= -\frac{2(c+dx)^{3/2}\cos(a+bx)}{3b}+\frac{d\sqrt{c+dx}\,\sin(a+bx)}{b^2}-\frac{(c+dx)^{3/2}\cos(a+bx)\sin^2}{3b}$$

$$= -\frac{2(c+dx)^{3/2}\cos(a+bx)}{3b}+\frac{d\sqrt{c+dx}\,\sin(a+bx)}{b^2}-\frac{(c+dx)^{3/2}\cos(a+bx)\sin^2}{3b}$$

$$= -\frac{2(c+dx)^{3/2}\cos(a+bx)}{3b}-\frac{9d^{3/2}\sqrt{\frac{\pi}{2}}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{8b^{5/2}}+\frac{d^{3/2}\sqrt{\frac{\pi}{6}}\,\mathrm{c}}{}$$

Mathematica [A] time = 1.69, size = 389, normalized size = 1.10

$$\frac{\sqrt{6\pi}\,d\sin\left(3a-\frac{3bc}{d}\right)C\left(\sqrt{\frac{b}{d}}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}\right)-81\sqrt{2\pi}\,d\sin\left(a-\frac{bc}{d}\right)C\left(\sqrt{\frac{b}{d}}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}\right)-81\sqrt{2\pi}\,d\cos\left(a-\frac{bc}{d}\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^(3/2)*Sin[a + b*x]^3,x]
```

```
[Out] (-108*b*c*Sqrt[b/d]*Sqrt[c + d*x]*Cos[a + b*x] - 108*b*Sqrt[b/d]*d*x*Sqrt[c
 + d*x]*Cos[a + b*x] + 12*b*c*Sqrt[b/d]*Sqrt[c + d*x]*Cos[3*(a + b*x)] + 12
*b*Sqrt[b/d]*d*x*Sqrt[c + d*x]*Cos[3*(a + b*x)] - 81*d*Sqrt[2*Pi]*Cos[a - (
b*c)/d]*FresnelS[Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c + d*x]] + d*Sqrt[6*Pi]*Cos[3*a
 - (3*b*c)/d]*FresnelS[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[c + d*x]] + d*Sqrt[6*Pi]*F
resnelC[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[c + d*x]]*Sin[3*a - (3*b*c)/d] - 81*d*Sqr
t[2*Pi]*FresnelC[Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c + d*x]]*Sin[a - (b*c)/d] + 162
*Sqrt[b/d]*d*Sqrt[c + d*x]*Sin[a + b*x] - 6*Sqrt[b/d]*d*Sqrt[c + d*x]*Sin[3
*(a + b*x)])/(144*b^2*Sqrt[b/d])
```

fricas [A] time = 0.77, size = 300, normalized size = 0.85

$$\frac{\sqrt{6}\,\pi d^2 \sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{3\,(bc-ad)}{d}\right) S\left(\sqrt{6}\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right) - 81\,\sqrt{2}\,\pi d^2 \sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{bc-ad}{d}\right) S\left(\sqrt{2}\,\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right) - 81\,\sqrt{2}\,\pi}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(3/2)*sin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/144*(sqrt(6)*pi*d^2*sqrt(b/(pi*d))*cos(-3*(b*c - a*d)/d)*fresnel_sin(sqrt
(6)*sqrt(d*x + c)*sqrt(b/(pi*d))) - 81*sqrt(2)*pi*d^2*sqrt(b/(pi*d))*cos(-(
b*c - a*d)/d)*fresnel_sin(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d))) - 81*sqrt(2
)*pi*d^2*sqrt(b/(pi*d))*fresnel_cos(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d)))*s
in(-(b*c - a*d)/d) + sqrt(6)*pi*d^2*sqrt(b/(pi*d))*fresnel_cos(sqrt(6)*sqrt
(d*x + c)*sqrt(b/(pi*d)))*sin(-3*(b*c - a*d)/d) + 24*(2*(b^2*d*x + b^2*c)*c
os(b*x + a)^3 - 6*(b^2*d*x + b^2*c)*cos(b*x + a) - (b*d*cos(b*x + a)^2 - 7*
b*d)*sin(b*x + a))*sqrt(d*x + c))/b^3
```

giac [C] time = 3.21, size = 1538, normalized size = 4.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(3/2)*sin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/288*(12*(-I*sqrt(6)*sqrt(pi)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x + c)*
(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((3*I*b*c - 3*I*a*d)/d)/(sqrt(b*d)*(I*b*d/sq
rt(b^2*d^2) + 1)) + 9*I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(
d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b
*d/sqrt(b^2*d^2) + 1)) - 9*I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*
sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*
d)*(-I*b*d/sqrt(b^2*d^2) + 1)) + I*sqrt(6)*sqrt(pi)*d*erf(-1/2*sqrt(6)*sqrt
(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-3*I*b*c + 3*I*a*d)/d
)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)))*c^2 + d^2*((-I*sqrt(6)*sqrt(pi)*(
12*b^2*c^2 + 4*I*b*c*d - d^2)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x + c)*(I
*b*d/sqrt(b^2*d^2) + 1)/d)*e^((3*I*b*c - 3*I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt
(b^2*d^2) + 1)*b^2) - 6*I*(-2*I*(d*x + c)^(3/2)*b*d + 4*I*sqrt(d*x + c)*b*c
*d - sqrt(d*x + c)*d^2)*e^((-3*I*(d*x + c)*b + 3*I*b*c - 3*I*a*d)/d)/b^2)/d
^2 + 9*(3*I*sqrt(2)*sqrt(pi)*(4*b^2*c^2 + 4*I*b*c*d - 3*d^2)*d*erf(-1/2*sqr
t(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a*d
)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b^2) - 2*I*(6*I*(d*x + c)^(3/2)*b
*d - 12*I*sqrt(d*x + c)*b*c*d + 9*sqrt(d*x + c)*d^2)*e^((-I*(d*x + c)*b + I
*b*c - I*a*d)/d)/b^2)/d^2 + 9*(-3*I*sqrt(2)*sqrt(pi)*(4*b^2*c^2 - 4*I*b*c*d
 - 3*d^2)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2)
```

```
+ 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*b^2) -
 2*I*(6*I*(d*x + c)^(3/2)*b*d - 12*I*sqrt(d*x + c)*b*c*d - 9*sqrt(d*x + c)*
d^2)*e^((I*(d*x + c)*b - I*b*c + I*a*d)/d)/b^2)/d^2 + (I*sqrt(6)*sqrt(pi)*(
12*b^2*c^2 - 4*I*b*c*d - d^2)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x + c)*(-
I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-3*I*b*c + 3*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/s
qrt(b^2*d^2) + 1)*b^2) - 6*I*(-2*I*(d*x + c)^(3/2)*b*d + 4*I*sqrt(d*x + c)*
b*c*d + sqrt(d*x + c)*d^2)*e^((3*I*(d*x + c)*b - 3*I*b*c + 3*I*a*d)/d)/b^2)
/d^2) + 4*(I*sqrt(6)*sqrt(pi)*(6*b*c + I*d)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sq
rt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((3*I*b*c - 3*I*a*d)/d)/(sqrt(b*
d)*(I*b*d/sqrt(b^2*d^2) + 1)*b) - 9*I*sqrt(2)*sqrt(pi)*(6*b*c + 3*I*d)*d*er
f(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b
*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b) + 9*I*sqrt(2)*sqrt(p
i)*(6*b*c - 3*I*d)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(
b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) +
1)*b) - I*sqrt(6)*sqrt(pi)*(6*b*c - I*d)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(
d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-3*I*b*c + 3*I*a*d)/d)/(sqrt(b*d
)*(-I*b*d/sqrt(b^2*d^2) + 1)*b) - 6*sqrt(d*x + c)*d*e^((3*I*(d*x + c)*b - 3
*I*b*c + 3*I*a*d)/d)/b + 54*sqrt(d*x + c)*d*e^((I*(d*x + c)*b - I*b*c + I*a
*d)/d)/b + 54*sqrt(d*x + c)*d*e^((-I*(d*x + c)*b + I*b*c - I*a*d)/d)/b - 6*
sqrt(d*x + c)*d*e^((-3*I*(d*x + c)*b + 3*I*b*c - 3*I*a*d)/d)/b)*c)/d
```

maple [A] time = 0.02, size = 384, normalized size = 1.08

$$\frac{-\frac{3d(dx+c)^{\frac{3}{2}}\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{4b}+\frac{9d\left(\frac{d\sqrt{dx+c}\,\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{2b}-\frac{d\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)S\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)+\sin\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{4b\sqrt{\frac{b}{d}}}\right)}{4b}+\frac{d(dx+\cdots}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(3/2)*sin(b*x+a)^3,x)
```

```
[Out] 2/d*(-3/8/b*d*(d*x+c)^(3/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)+9/8/b*d*(1/2/b*d
*(d*x+c)^(1/2)*sin(1/d*(d*x+c)*b+(a*d-b*c)/d)-1/4/b*d*2^(1/2)*Pi^(1/2)/(b/d
)^(1/2)*(cos((a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/
2)*b/d)+sin((a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2
)*b/d)))+1/24/b*d*(d*x+c)^(3/2)*cos(3/d*(d*x+c)*b+3*(a*d-b*c)/d)-1/8/b*d*(1
/6/b*d*(d*x+c)^(1/2)*sin(3/d*(d*x+c)*b+3*(a*d-b*c)/d)-1/36/b*d*2^(1/2)*Pi^(
1/2)*3^(1/2)/(b/d)^(1/2)*(cos(3*(a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1
/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)+sin(3*(a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(
1/2)*3^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)))
```

maxima [C] time = 2.87, size = 499, normalized size = 1.41

$$\left(\frac{48\,(dx+c)^{\frac{3}{2}}b^3\cos\left(\frac{3\,((dx+c)b-bc+ad)}{d}\right)}{d}-\frac{432\,(dx+c)^{\frac{3}{2}}b^3\cos\left(\frac{(dx+c)b-bc+ad}{d}\right)}{d}-24\,\sqrt{dx+c}\,b^2\sin\left(\frac{3\,((dx+c)b-bc+ad)}{d}\right)+648\,\sqrt{dx+c}\,b^2\,\mathrm{s}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(3/2)*sin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/576*(48*(d*x + c)^(3/2)*b^3*cos(3*((d*x + c)*b - b*c + a*d)/d)/d - 432*(d
*x + c)^(3/2)*b^3*cos(((d*x + c)*b - b*c + a*d)/d)/d - 24*sqrt(d*x + c)*b^2
*sin(3*((d*x + c)*b - b*c + a*d)/d) + 648*sqrt(d*x + c)*b^2*sin(((d*x + c)*
b - b*c + a*d)/d) - (-(I + 1)*9^(1/4)*sqrt(2)*sqrt(pi)*b*d*(b^2/d^2)^(1/4)*
cos(-3*(b*c - a*d)/d) + (I - 1)*9^(1/4)*sqrt(2)*sqrt(pi)*b*d*(b^2/d^2)^(1/4
)*sin(-3*(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(3*I*b/d)) - ((81*I + 81)*sq
rt(2)*sqrt(pi)*b*d*(b^2/d^2)^(1/4)*cos(-(b*c - a*d)/d) - (81*I - 81)*sqrt(2
)*sqrt(pi)*b*d*(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(
I*b/d)) - (-(81*I - 81)*sqrt(2)*sqrt(pi)*b*d*(b^2/d^2)^(1/4)*cos(-(b*c - a*
d)/d) + (81*I + 81)*sqrt(2)*sqrt(pi)*b*d*(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d
))*erf(sqrt(d*x + c)*sqrt(-I*b/d)) - ((I - 1)*9^(1/4)*sqrt(2)*sqrt(pi)*b*d*
(b^2/d^2)^(1/4)*cos(-3*(b*c - a*d)/d) - (I + 1)*9^(1/4)*sqrt(2)*sqrt(pi)*b*
d*(b^2/d^2)^(1/4)*sin(-3*(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(-3*I*b/d)))
*d/b^4
```

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

$$\int \sin\left(a+b\,x\right)^3\,{\left(c+d\,x\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(c + d*x)^(3/2),x)
```

```
[Out] int(sin(a + b*x)^3*(c + d*x)^(3/2), x)
```

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

$$\int \left(c + dx\right)^{\frac{3}{2}} \sin^{3}{\left(a + bx \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(3/2)*sin(b*x+a)**3,x)
```

```
[Out] Integral((c + d*x)**(3/2)*sin(a + b*x)**3, x)
```

3.55 $\int \sqrt{c+dx}\,\sin^3(a+bx)\,dx$

Optimal. Leaf size=304

$$\frac{3\sqrt{\frac{\pi}{2}}\sqrt{d}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{3/2}}-\frac{\sqrt{\frac{\pi}{6}}\sqrt{d}\cos\left(3a-\frac{3bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{12b^{3/2}}+\frac{\sqrt{\frac{\pi}{6}}\sqrt{d}\sin\left(3a-\frac{3bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\ldots}}{}\right.}{12b^{3/2}}$$

```
[Out] -1/72*cos(3*a-3*b*c/d)*FresnelC(b^(1/2)*6^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1
/2))*d^(1/2)*6^(1/2)*Pi^(1/2)/b^(3/2)+1/72*FresnelS(b^(1/2)*6^(1/2)/Pi^(1/2
)*(d*x+c)^(1/2)/d^(1/2))*sin(3*a-3*b*c/d)*d^(1/2)*6^(1/2)*Pi^(1/2)/b^(3/2)+
3/8*cos(a-b*c/d)*FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*d
^(1/2)*2^(1/2)*Pi^(1/2)/b^(3/2)-3/8*FresnelS(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+
c)^(1/2)/d^(1/2))*sin(a-b*c/d)*d^(1/2)*2^(1/2)*Pi^(1/2)/b^(3/2)-3/4*cos(b*x
+a)*(d*x+c)^(1/2)/b+1/12*cos(3*b*x+3*a)*(d*x+c)^(1/2)/b
```

Rubi [A] time = 0.50, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3312, 3296, 3306, 3305, 3351, 3304, 3352}

$$\frac{3\sqrt{\frac{\pi}{2}}\sqrt{d}\cos\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{4b^{3/2}}-\frac{\sqrt{\frac{\pi}{6}}\sqrt{d}\cos\left(3a-\frac{3bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{12b^{3/2}}+\frac{\sqrt{\frac{\pi}{6}}\sqrt{d}\sin\left(\ldots\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c + d*x]*Sin[a + b*x]^3,x]
```

```
[Out] (-3*Sqrt[c + d*x]*Cos[a + b*x])/(4*b) + (Sqrt[c + d*x]*Cos[3*a + 3*b*x])/(1
2*b) + (3*Sqrt[d]*Sqrt[Pi/2]*Cos[a - (b*c)/d]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*
Sqrt[c + d*x])/Sqrt[d]])/(4*b^(3/2)) - (Sqrt[d]*Sqrt[Pi/6]*Cos[3*a - (3*b*c
)/d]*FresnelC[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]])/(12*b^(3/2)) + (
Sqrt[d]*Sqrt[Pi/6]*FresnelS[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin
[3*a - (3*b*c)/d])/(12*b^(3/2)) - (3*Sqrt[d]*Sqrt[Pi/2]*FresnelS[(Sqrt[b]*S
qrt[2/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[a - (b*c)/d])/(4*b^(3/2))
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \sqrt{c+dx}\sin^3(a+bx)\,dx = \int \left(\frac{3}{4}\sqrt{c+dx}\sin(a+bx)-\frac{1}{4}\sqrt{c+dx}\sin(3a+3bx)\right)dx$$
$$= -\left(\frac{1}{4}\int \sqrt{c+dx}\sin(3a+3bx)\,dx\right)+\frac{3}{4}\int \sqrt{c+dx}\sin(a+bx)\,dx$$
$$= -\frac{3\sqrt{c+dx}\cos(a+bx)}{4b}+\frac{\sqrt{c+dx}\cos(3a+3bx)}{12b}-\frac{d\int \frac{\cos(3a+3bx)}{\sqrt{c+dx}}dx}{24b}+\frac{(3d)\int \frac{\text{co}}{}}{8}$$
$$= -\frac{3\sqrt{c+dx}\cos(a+bx)}{4b}+\frac{\sqrt{c+dx}\cos(3a+3bx)}{12b}-\frac{\left(d\cos\left(3a-\frac{3bc}{d}\right)\right)\int \frac{\cos\left(\frac{3bc}{d}+3\right.}{\sqrt{c+dx}}}{24b}$$
$$= -\frac{3\sqrt{c+dx}\cos(a+bx)}{4b}+\frac{\sqrt{c+dx}\cos(3a+3bx)}{12b}-\frac{\cos\left(3a-\frac{3bc}{d}\right)\text{Subst}\left(\int \cos\right.}{12b}$$
$$= -\frac{3\sqrt{c+dx}\cos(a+bx)}{4b}+\frac{\sqrt{c+dx}\cos(3a+3bx)}{12b}+\frac{3\sqrt{d}\sqrt{\frac{\pi}{2}}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}}{}\right.}{4b^{3/2}}$$

Mathematica [A] time = 0.81, size = 266, normalized size = 0.88

$$\frac{27\sqrt{2\pi}\cos\left(a-\frac{bc}{d}\right)C\left(\sqrt{\frac{b}{d}}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}\right)-\sqrt{6\pi}\cos\left(3a-\frac{3bc}{d}\right)C\left(\sqrt{\frac{b}{d}}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}\right)+\sqrt{6\pi}\sin\left(3a-\frac{3bc}{d}\right)S\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c + d*x]*Sin[a + b*x]^3,x]
```

```
[Out] (-54*Sqrt[b/d]*Sqrt[c + d*x]*Cos[a + b*x] + 6*Sqrt[b/d]*Sqrt[c + d*x]*Cos[3
*(a + b*x)] + 27*Sqrt[2*Pi]*Cos[a - (b*c)/d]*FresnelC[Sqrt[b/d]*Sqrt[2/Pi]*
Sqrt[c + d*x]] - Sqrt[6*Pi]*Cos[3*a - (3*b*c)/d]*FresnelC[Sqrt[b/d]*Sqrt[6/
Pi]*Sqrt[c + d*x]] + Sqrt[6*Pi]*FresnelS[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[c + d*x]
]*Sin[3*a - (3*b*c)/d] - 27*Sqrt[2*Pi]*FresnelS[Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c
 + d*x]]*Sin[a - (b*c)/d])/(72*b*Sqrt[b/d])
```

fricas [A] time = 0.70, size = 246, normalized size = 0.81

$$-\frac{\sqrt{6}\,\pi d\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{3(bc-ad)}{d}\right)C\left(\sqrt{6}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)-27\sqrt{2}\,\pi d\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{bc-ad}{d}\right)C\left(\sqrt{2}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)+27\sqrt{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(1/2)*sin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] -1/72*(sqrt(6)*pi*d*sqrt(b/(pi*d))*cos(-3*(b*c - a*d)/d)*fresnel_cos(sqrt(6
)*sqrt(d*x + c)*sqrt(b/(pi*d))) - 27*sqrt(2)*pi*d*sqrt(b/(pi*d))*cos(-(b*c
- a*d)/d)*fresnel_cos(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d))) + 27*sqrt(2)*pi
*d*sqrt(b/(pi*d))*fresnel_sin(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-(b
*c - a*d)/d) - sqrt(6)*pi*d*sqrt(b/(pi*d))*fresnel_sin(sqrt(6)*sqrt(d*x + c
)*sqrt(b/(pi*d)))*sin(-3*(b*c - a*d)/d) - 24*(b*cos(b*x + a)^3 - 3*b*cos(b*
x + a))*sqrt(d*x + c))/b^2
```

giac [C] time = 0.98, size = 842, normalized size = 2.77

$$-\frac{\frac{i\sqrt{6}\sqrt{\pi}(6bc+id)d\,\mathrm{erf}\left(-\frac{\sqrt{6}\sqrt{bd}\sqrt{dx+c}\left(\frac{ibd}{\sqrt{b^2d^2}}+1\right)}{2d}\right)e^{\left(\frac{3ibc-3iad}{d}\right)}}{\sqrt{bd}\left(\frac{ibd}{\sqrt{b^2d^2}}+1\right)b}-\frac{9i\sqrt{2}\sqrt{\pi}(6bc+3id)d\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{bd}\sqrt{dx+c}\left(\frac{ibd}{\sqrt{b^2d^2}}+1\right)}{2d}\right)e^{\left(\frac{ibc-iad}{d}\right)}}{\sqrt{bd}\left(\frac{ibd}{\sqrt{b^2d^2}}+1\right)b}+\frac{9i\sqrt{2}\sqrt{\pi}(6\cdots}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(1/2)*sin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/144*(I*sqrt(6)*sqrt(pi)*(6*b*c + I*d)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(
d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((3*I*b*c - 3*I*a*d)/d)/(sqrt(b*d)*
(I*b*d/sqrt(b^2*d^2) + 1)*b) - 9*I*sqrt(2)*sqrt(pi)*(6*b*c + 3*I*d)*d*erf(-
1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c
- I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)*b) + 9*I*sqrt(2)*sqrt(pi)*
(6*b*c - 3*I*d)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2
*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)*
b) - I*sqrt(6)*sqrt(pi)*(6*b*c - I*d)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x
 + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-3*I*b*c + 3*I*a*d)/d)/(sqrt(b*d)*(
-I*b*d/sqrt(b^2*d^2) + 1)*b) + 6*(-I*sqrt(6)*sqrt(pi)*d*erf(-1/2*sqrt(6)*sq
rt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((3*I*b*c - 3*I*a*d)/d
)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)) + 9*I*sqrt(2)*sqrt(pi)*d*erf(-1/2*s
qrt(2)*sqrt(b*d)*sqrt(d*x + c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a
*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^2*d^2) + 1)) - 9*I*sqrt(2)*sqrt(pi)*d*erf(-
1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*
c + I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)) + I*sqrt(6)*sqrt(pi)*d
*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^(
(-3*I*b*c + 3*I*a*d)/d)/(sqrt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)))*c - 6*sqrt(
d*x + c)*d*e^((3*I*(d*x + c)*b - 3*I*b*c + 3*I*a*d)/d)/b + 54*sqrt(d*x + c)
*d*e^((I*(d*x + c)*b - I*b*c + I*a*d)/d)/b + 54*sqrt(d*x + c)*d*e^((-I*(d*x
 + c)*b + I*b*c - I*a*d)/d)/b - 6*sqrt(d*x + c)*d*e^((-3*I*(d*x + c)*b + 3*
I*b*c - 3*I*a*d)/d)/b)/d
```

maple [A] time = 0.02, size = 296, normalized size = 0.97

$$\frac{-\frac{3d\sqrt{dx+c}\,\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{4b}+\frac{3d\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)-\sin\left(\frac{da-cb}{d}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{8b\sqrt{\frac{b}{d}}}+\frac{d\sqrt{dx+c}\,\cos\left(\frac{3(dx+c)b}{d}+\frac{3da-3cb}{d}\right.}{12b}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(1/2)*sin(b*x+a)^3,x)
```

```
[Out] 2/d*(-3/8/b*d*(d*x+c)^(1/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)+3/16/b*d*2^(1/2)
*Pi^(1/2)/(b/d)^(1/2)*(cos((a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/
2)*(d*x+c)^(1/2)*b/d)-sin((a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2
)*(d*x+c)^(1/2)*b/d))+1/24/b*d*(d*x+c)^(1/2)*cos(3/d*(d*x+c)*b+3*(a*d-b*c)/
d)-1/144/b*d*2^(1/2)*Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(cos(3*(a*d-b*c)/d)*Fresn
elC(2^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)-sin(3*(a*d-b*c)
/d)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)))
```

maxima [C] time = 1.03, size = 422, normalized size = 1.39

$$\frac{\left(\frac{24\sqrt{dx+c}\,b^2\cos\left(\frac{3((dx+c)b-bc+ad)}{d}\right)}{d}-\frac{216\sqrt{dx+c}\,b^2\cos\left(\frac{(dx+c)b-bc+ad}{d}\right)}{d}+\left((i-1)\cdot 9^{\frac{1}{4}}\sqrt{2}\,\sqrt{\pi}\,b\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\cos\left(-\frac{3\,(bc-ad)}{d}\right)+(i+1)\cdot 9\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^(1/2)*sin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/288*(24*sqrt(d*x + c)*b^2*cos(3*((d*x + c)*b - b*c + a*d)/d)/d - 216*sqrt
(d*x + c)*b^2*cos(((d*x + c)*b - b*c + a*d)/d)/d + ((I - 1)*9^(1/4)*sqrt(2)
*sqrt(pi)*b*(b^2/d^2)^(1/4)*cos(-3*(b*c - a*d)/d) + (I + 1)*9^(1/4)*sqrt(2)
*sqrt(pi)*b*(b^2/d^2)^(1/4)*sin(-3*(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(3
*I*b/d)) + (-(27*I - 27)*sqrt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*cos(-(b*c - a*d
)/d) - (27*I + 27)*sqrt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d))*
erf(sqrt(d*x + c)*sqrt(I*b/d)) + ((27*I + 27)*sqrt(2)*sqrt(pi)*b*(b^2/d^2)^
(1/4)*cos(-(b*c - a*d)/d) + (27*I - 27)*sqrt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*
sin(-(b*c - a*d)/d))*erf(sqrt(d*x + c)*sqrt(-I*b/d)) + (-(I + 1)*9^(1/4)*sq
rt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*cos(-3*(b*c - a*d)/d) - (I - 1)*9^(1/4)*sq
rt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*sin(-3*(b*c - a*d)/d))*erf(sqrt(d*x + c)*s
qrt(-3*I*b/d)))*d/b^3
```

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

$$\int \sin\left(a+b\,x\right)^3\,\sqrt{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(c + d*x)^(1/2),x)
```

```
[Out] int(sin(a + b*x)^3*(c + d*x)^(1/2), x)
```

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

$$\int \sqrt{c+dx}\,\sin^3(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**(1/2)*sin(b*x+a)**3,x)
```

```
[Out] Integral(sqrt(c + d*x)*sin(a + b*x)**3, x)
```

3.56 $\int \frac{\sin^3(a+bx)}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=257

$$-\frac{\sqrt{\frac{\pi}{6}}\sin\left(3a-\frac{3bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}}+\frac{3\sqrt{\frac{\pi}{2}}\sin\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}}+\frac{3\sqrt{\frac{\pi}{2}}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}}-$$

```
[Out] -1/12*cos(3*a-3*b*c/d)*FresnelS(b^(1/2)*6^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1
/2))*6^(1/2)*Pi^(1/2)/b^(1/2)/d^(1/2)-1/12*FresnelC(b^(1/2)*6^(1/2)/Pi^(1/2
)*(d*x+c)^(1/2)/d^(1/2))*sin(3*a-3*b*c/d)*6^(1/2)*Pi^(1/2)/b^(1/2)/d^(1/2)+
3/4*cos(a-b*c/d)*FresnelS(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2
^(1/2)*Pi^(1/2)/b^(1/2)/d^(1/2)+3/4*FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+
c)^(1/2)/d^(1/2))*sin(a-b*c/d)*2^(1/2)*Pi^(1/2)/b^(1/2)/d^(1/2)
```

Rubi [A] time = 0.40, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3312, 3306, 3305, 3351, 3304, 3352}

$$-\frac{\sqrt{\frac{\pi}{6}}\sin\left(3a-\frac{3bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}}+\frac{3\sqrt{\frac{\pi}{2}}\sin\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}}+\frac{3\sqrt{\frac{\pi}{2}}\cos\left(a-\frac{bc}{d}\right)S}{2\sqrt{b}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3/Sqrt[c + d*x],x]
```

```
[Out] (3*Sqrt[Pi/2]*Cos[a - (b*c)/d]*FresnelS[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x])/
Sqrt[d]])/(2*Sqrt[b]*Sqrt[d]) - (Sqrt[Pi/6]*Cos[3*a - (3*b*c)/d]*FresnelS[(
Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]])/(2*Sqrt[b]*Sqrt[d]) - (Sqrt[Pi/
6]*FresnelC[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[3*a - (3*b*c)/d
])/(2*Sqrt[b]*Sqrt[d]) + (3*Sqrt[Pi/2]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c
+ d*x])/Sqrt[d]]*Sin[a - (b*c)/d])/(2*Sqrt[b]*Sqrt[d])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
```

```
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sin^3(a+bx)}{\sqrt{c+dx}}\,dx &= \int \left(\frac{3\sin(a+bx)}{4\sqrt{c+dx}} - \frac{\sin(3a+3bx)}{4\sqrt{c+dx}}\right) dx \\
&= -\left(\frac{1}{4}\int \frac{\sin(3a+3bx)}{\sqrt{c+dx}}\,dx\right) + \frac{3}{4}\int \frac{\sin(a+bx)}{\sqrt{c+dx}}\,dx \\
&= -\left(\frac{1}{4}\cos\left(3a-\frac{3bc}{d}\right)\int \frac{\sin\left(\frac{3bc}{d}+3bx\right)}{\sqrt{c+dx}}\,dx\right) + \frac{1}{4}\left(3\cos\left(a-\frac{bc}{d}\right)\right)\int \frac{\sin\left(\frac{bc}{d}+bx\right)}{\sqrt{c+dx}}\,dx - \frac{1}{4}\,\mathrm{si} \\
&= -\frac{\cos\left(3a-\frac{3bc}{d}\right)\operatorname{Subst}\left(\int \sin\left(\frac{3bx^2}{d}\right)dx, x, \sqrt{c+dx}\right)}{2d} + \frac{\left(3\cos\left(a-\frac{bc}{d}\right)\right)\operatorname{Subst}\left(\int \sin\left(\frac{bx^2}{d}\right)\right.}{2d} \\
&= \frac{3\sqrt{\frac{\pi}{2}}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}} - \frac{\sqrt{\frac{\pi}{6}}\cos\left(3a-\frac{3bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{2\sqrt{b}\sqrt{d}} - \frac{\sqrt{\frac{\pi}{6}}\,C\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\ldots}{\sqrt{d}}\right.}{2\ldots}
\end{aligned}
$$

Mathematica [A] time = 0.60, size = 202, normalized size = 0.79

$$-\frac{\sqrt{\frac{\pi}{2}}\sqrt{\frac{b}{d}}\left(\sqrt{3}\sin\left(3a-\frac{3bc}{d}\right)C\left(\sqrt{\frac{b}{d}}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}\right)-9\sin\left(a-\frac{bc}{d}\right)C\left(\sqrt{\frac{b}{d}}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}\right)-9\cos\left(a-\frac{bc}{d}\right)S\left(\sqrt{\frac{b}{d}}\cdots\right.\right.}{6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3/Sqrt[c + d*x],x]
```

```
[Out] -1/6*(Sqrt[b/d]*Sqrt[Pi/2]*(-9*Cos[a - (b*c)/d]*FresnelS[Sqrt[b/d]*Sqrt[2/P
i]*Sqrt[c + d*x]] + Sqrt[3]*Cos[3*a - (3*b*c)/d]*FresnelS[Sqrt[b/d]*Sqrt[6/
Pi]*Sqrt[c + d*x]] + Sqrt[3]*FresnelC[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[c + d*x]]*S
in[3*a - (3*b*c)/d] - 9*FresnelC[Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c + d*x]]*Sin[a
- (b*c)/d]))/b
```

fricas [A] time = 0.70, size = 212, normalized size = 0.82

$$-\frac{\sqrt{6}\,\pi\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{3(bc-ad)}{d}\right)S\left(\sqrt{6}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)-9\sqrt{2}\,\pi\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{bc-ad}{d}\right)S\left(\sqrt{2}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)-9\sqrt{2}\,\pi\sqrt{\cdots}}{12\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/12*(sqrt(6)*pi*sqrt(b/(pi*d))*cos(-3*(b*c - a*d)/d)*fresnel_sin(sqrt(6)*
sqrt(d*x + c)*sqrt(b/(pi*d))) - 9*sqrt(2)*pi*sqrt(b/(pi*d))*cos(-(b*c - a*d
)/d)*fresnel_sin(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d))) - 9*sqrt(2)*pi*sqrt(
b/(pi*d))*fresnel_cos(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d
)/d) + sqrt(6)*pi*sqrt(b/(pi*d))*fresnel_cos(sqrt(6)*sqrt(d*x + c)*sqrt(b/(
pi*d)))*sin(-3*(b*c - a*d)/d))/b
```

giac [C] time = 0.93, size = 330, normalized size = 1.28

$$-\frac{-\frac{i\sqrt{6}\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{6}\sqrt{bd}\sqrt{dx+c}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{2\,d}\right)e^{\left(\frac{3i\,bc-3i\,ad}{d}\right)}}{\sqrt{bd}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}+\frac{9i\sqrt{2}\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{bd}\sqrt{dx+c}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}{2\,d}\right)e^{\left(\frac{i\,bc-i\,ad}{d}\right)}}{\sqrt{bd}\left(\frac{i\,bd}{\sqrt{b^2d^2}}+1\right)}-\frac{9i\sqrt{2}\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{bd}\sqrt{dx\cdots}}{\cdots}\right)}{\sqrt{bd}\left(-\cdots\right)}}{24\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] -1/24*(-I*sqrt(6)*sqrt(pi)*d*erf(-1/2*sqrt(6)*sqrt(b*d)*sqrt(d*x + c)*(I*b*
d/sqrt(b^2*d^2) + 1)/d)*e^((3*I*b*c - 3*I*a*d)/d)/(sqrt(b*d)*(I*b*d/sqrt(b^
```

```
2*d^2) + 1)) + 9*I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(d*x +
 c)*(I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((I*b*c - I*a*d)/d)/(sqrt(b*d)*(I*b*d/sq
rt(b^2*d^2) + 1)) - 9*I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(b*d)*sqrt(
d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-I*b*c + I*a*d)/d)/(sqrt(b*d)*(-
I*b*d/sqrt(b^2*d^2) + 1)) + I*sqrt(6)*sqrt(pi)*d*erf(-1/2*sqrt(6)*sqrt(b*d)
*sqrt(d*x + c)*(-I*b*d/sqrt(b^2*d^2) + 1)/d)*e^((-3*I*b*c + 3*I*a*d)/d)/(sq
rt(b*d)*(-I*b*d/sqrt(b^2*d^2) + 1)))/d
```

maple [A] time = 0.02, size = 210, normalized size = 0.82

$$\frac{\frac{3\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)S\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)+\sin\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{4\sqrt{\frac{b}{d}}}-\frac{\sqrt{2}\,\sqrt{\pi}\,\sqrt{3}\left(\cos\left(\frac{3da-3cb}{d}\right)S\left(\frac{\sqrt{2}\,\sqrt{3}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)+\sin\left(\frac{3da-3cb}{d}\right)\mathrm{FresnelC}\left(\cdots\right.\right.}{12\sqrt{\frac{b}{d}}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3/(d*x+c)^(1/2),x)
```

```
[Out] 2/d*(3/8*2^(1/2)*Pi^(1/2)/(b/d)^(1/2)*(cos((a*d-b*c)/d)*FresnelS(2^(1/2)/Pi
^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)+sin((a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^
(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d))-1/24*2^(1/2)*Pi^(1/2)*3^(1/2)/(b/d)^(
1/2)*(cos(3*(a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(d*x
+c)^(1/2)*b/d)+sin(3*(a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^(
1/2)*(d*x+c)^(1/2)*b/d)))
```

maxima [C] time = 1.75, size = 375, normalized size = 1.46

$$\left(\left(\left(-\frac{(i+1)\cdot 9^{\frac{1}{4}}\sqrt{2}\,\sqrt{\pi}\,b\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\cos\left(-\frac{3\,(bc-ad)}{d}\right)}{d}+\frac{(i-1)\cdot 9^{\frac{1}{4}}\sqrt{2}\,\sqrt{\pi}\,b\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\sin\left(-\frac{3\,(bc-ad)}{d}\right)}{d}\right)\mathrm{erf}\left(\sqrt{dx+c}\,\sqrt{\frac{3i\,b}{d}}\right)+\left(\frac{(9i+9)\,\sqrt{2}\,\sqrt{\pi}\,b\left(\frac{b^2}{d^2}\right)^{\frac{1}{4}}\cos\left(\cdots\right.}{d}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/48*((-(I + 1)*9^(1/4)*sqrt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*cos(-3*(b*c - a*
d)/d)/d + (I - 1)*9^(1/4)*sqrt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*sin(-3*(b*c -
a*d)/d)/d)*erf(sqrt(d*x + c)*sqrt(3*I*b/d)) + ((9*I + 9)*sqrt(2)*sqrt(pi)*b
*(b^2/d^2)^(1/4)*cos(-(b*c - a*d)/d)/d - (9*I - 9)*sqrt(2)*sqrt(pi)*b*(b^2/
d^2)^(1/4)*sin(-(b*c - a*d)/d)/d)*erf(sqrt(d*x + c)*sqrt(I*b/d)) + (-(9*I -
 9)*sqrt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*cos(-(b*c - a*d)/d)/d + (9*I + 9)*sq
rt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*sin(-(b*c - a*d)/d)/d)*erf(sqrt(d*x + c)*s
```

```
qrt(-I*b/d)) + ((I - 1)*9^(1/4)*sqrt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*cos(-3*(
b*c - a*d)/d)/d - (I + 1)*9^(1/4)*sqrt(2)*sqrt(pi)*b*(b^2/d^2)^(1/4)*sin(-3
*(b*c - a*d)/d)/d)*erf(sqrt(d*x + c)*sqrt(-3*I*b/d)))*d/b^2
```

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

$$\int \frac{\sin (a+b\,x)^3}{\sqrt{c+d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3/(c + d*x)^(1/2),x)
```

```
[Out] int(sin(a + b*x)^3/(c + d*x)^(1/2), x)
```

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

$$\int \frac{\sin^3(a+bx)}{\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3/(d*x+c)**(1/2),x)
```

```
[Out] Integral(sin(a + b*x)**3/sqrt(c + d*x), x)
```

3.57 $\int \frac{\sin^3(a+bx)}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=270

$$\frac{3\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{\sqrt{\frac{3\pi}{2}}\sqrt{b}\cos\left(3a-\frac{3bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}+\frac{\sqrt{\frac{3\pi}{2}}\sqrt{b}\sin\left(3a-\frac{3bc}{d}\right)S\left(\frac{\sqrt{b}\ldots}{}\right)}{d^{3/2}}$$

```
[Out] 3/2*cos(a-b*c/d)*FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*b
^(1/2)*2^(1/2)*Pi^(1/2)/d^(3/2)-3/2*FresnelS(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+
c)^(1/2)/d^(1/2))*sin(a-b*c/d)*b^(1/2)*2^(1/2)*Pi^(1/2)/d^(3/2)-1/2*cos(3*a
-3*b*c/d)*FresnelC(b^(1/2)*6^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*b^(1/2)*
6^(1/2)*Pi^(1/2)/d^(3/2)+1/2*FresnelS(b^(1/2)*6^(1/2)/Pi^(1/2)*(d*x+c)^(1/2
)/d^(1/2))*sin(3*a-3*b*c/d)*b^(1/2)*6^(1/2)*Pi^(1/2)/d^(3/2)-2*sin(b*x+a)^3
/d/(d*x+c)^(1/2)
```

Rubi [A] time = 0.56, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3313, 3306, 3305, 3351, 3304, 3352}

$$\frac{3\sqrt{\frac{\pi}{2}}\sqrt{b}\cos\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{\sqrt{\frac{3\pi}{2}}\sqrt{b}\cos\left(3a-\frac{3bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}}+\frac{\sqrt{\frac{3\pi}{2}}\sqrt{b}\sin(\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3/(c + d*x)^(3/2),x]
```

```
[Out] (3*Sqrt[b]*Sqrt[Pi/2]*Cos[a - (b*c)/d]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c
+ d*x])/Sqrt[d]])/d^(3/2) - (Sqrt[b]*Sqrt[(3*Pi)/2]*Cos[3*a - (3*b*c)/d]*Fr
esnelC[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]])/d^(3/2) + (Sqrt[b]*Sqrt
[(3*Pi)/2]*FresnelS[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[3*a - (
3*b*c)/d])/d^(3/2) - (3*Sqrt[b]*Sqrt[Pi/2]*FresnelS[(Sqrt[b]*Sqrt[2/Pi]*Sqr
t[c + d*x])/Sqrt[d]]*Sin[a - (b*c)/d])/d^(3/2) - (2*Sin[a + b*x]^3)/(d*Sqrt
[c + d*x])
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin^3(a+bx)}{(c+dx)^{3/2}}\,dx = -\frac{2\sin^3(a+bx)}{d\sqrt{c+dx}} + \frac{(6b)\int \left(\frac{\cos(a+bx)}{4\sqrt{c+dx}} - \frac{\cos(3a+3bx)}{4\sqrt{c+dx}}\right)dx}{d}$$

$$= -\frac{2\sin^3(a+bx)}{d\sqrt{c+dx}} + \frac{(3b)\int \frac{\cos(a+bx)}{\sqrt{c+dx}}\,dx}{2d} - \frac{(3b)\int \frac{\cos(3a+3bx)}{\sqrt{c+dx}}\,dx}{2d}$$

$$= -\frac{2\sin^3(a+bx)}{d\sqrt{c+dx}} - \frac{\left(3b\cos\left(3a-\frac{3bc}{d}\right)\right)\int \frac{\cos\left(\frac{3bc}{d}+3bx\right)}{\sqrt{c+dx}}\,dx}{2d} + \frac{\left(3b\cos\left(a-\frac{bc}{d}\right)\right)\int \frac{\cos\left(\frac{bc}{d}+bx\right)}{\sqrt{c+dx}}\,dx}{2d} +$$

$$= -\frac{2\sin^3(a+bx)}{d\sqrt{c+dx}} - \frac{\left(3b\cos\left(3a-\frac{3bc}{d}\right)\right)\text{Subst}\left(\int \cos\left(\frac{3bx^2}{d}\right)dx, x, \sqrt{c+dx}\right)}{d^2} + \frac{\left(3b\cos\left(a-\frac{b}{d}\right.\right.}{}$$

$$= \frac{3\sqrt{b}\sqrt{\frac{\pi}{2}}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}} - \frac{\sqrt{b}\sqrt{\frac{3\pi}{2}}\cos\left(3a-\frac{3bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{3/2}} + \frac{\sqrt{b}\sqrt{\frac{3}{}}}{}$$

Mathematica [A] time = 1.02, size = 300, normalized size = 1.11

$$\frac{3\sqrt{2\pi}\sqrt{\frac{b}{d}}\sqrt{c+dx}\cos\left(a-\frac{bc}{d}\right)C\left(\sqrt{\frac{b}{d}}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}\right) - \sqrt{6\pi}\sqrt{\frac{b}{d}}\sqrt{c+dx}\cos\left(3a-\frac{3bc}{d}\right)C\left(\sqrt{\frac{b}{d}}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}\right) + }{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3/(c + d*x)^(3/2),x]
```

```
[Out] (3*Sqrt[b/d]*Sqrt[2*Pi]*Sqrt[c + d*x]*Cos[a - (b*c)/d]*FresnelC[Sqrt[b/d]*S
qrt[2/Pi]*Sqrt[c + d*x]] - Sqrt[b/d]*Sqrt[6*Pi]*Sqrt[c + d*x]*Cos[3*a - (3*
b*c)/d]*FresnelC[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[c + d*x]] + Sqrt[b/d]*Sqrt[6*Pi]
*Sqrt[c + d*x]*FresnelS[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[c + d*x]]*Sin[3*a - (3*b*
c)/d] - 3*Sqrt[b/d]*Sqrt[2*Pi]*Sqrt[c + d*x]*FresnelS[Sqrt[b/d]*Sqrt[2/Pi]*
Sqrt[c + d*x]]*Sin[a - (b*c)/d] - 3*Sin[a + b*x] + Sin[3*(a + b*x)])/(2*d*S
qrt[c + d*x])
```

fricas [A] time = 0.74, size = 274, normalized size = 1.01

$$-\frac{\sqrt{6}\,(\pi dx+\pi c)\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{3\,(bc-ad)}{d}\right)C\left(\sqrt{6}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right) - 3\sqrt{2}\,(\pi dx+\pi c)\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{bc-ad}{d}\right)C\left(\sqrt{2}\sqrt{dx+c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(6)*(pi*d*x + pi*c)*sqrt(b/(pi*d))*cos(-3*(b*c - a*d)/d)*fresnel_
cos(sqrt(6)*sqrt(d*x + c)*sqrt(b/(pi*d))) - 3*sqrt(2)*(pi*d*x + pi*c)*sqrt(
b/(pi*d))*cos(-(b*c - a*d)/d)*fresnel_cos(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*
d))) + 3*sqrt(2)*(pi*d*x + pi*c)*sqrt(b/(pi*d))*fresnel_sin(sqrt(2)*sqrt(d*
x + c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d)/d) - sqrt(6)*(pi*d*x + pi*c)*sqrt(b
/(pi*d))*fresnel_sin(sqrt(6)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-3*(b*c - a*
d)/d) - 4*sqrt(d*x + c)*(cos(b*x + a)^2 - 1)*sin(b*x + a))/(d^2*x + c*d)
```

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

$$\int \frac{\sin(bx+a)^3}{(dx+c)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^3/(d*x + c)^(3/2), x)
```

maple [A] time = 0.02, size = 288, normalized size = 1.07

$$\frac{-\frac{3\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{2\sqrt{dx+c}}+\frac{3b\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)-\sin\left(\frac{da-cb}{d}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{2d\sqrt{\frac{b}{d}}}+\frac{\sin\left(\frac{3(dx+c)b}{d}+\frac{3da-3cb}{d}\right)}{2\sqrt{dx+c}}-\frac{b\sqrt{2}\,\sqrt{\pi}\,\sqrt{3}\,\left(\cdots\right.}{\cdots}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3/(d*x+c)^(3/2),x)
```

```
[Out] 2/d*(-3/4/(d*x+c)^(1/2)*sin(1/d*(d*x+c)*b+(a*d-b*c)/d)+3/4*b/d*2^(1/2)*Pi^(
1/2)/(b/d)^(1/2)*(cos((a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d
*x+c)^(1/2)*b/d)-sin((a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*
x+c)^(1/2)*b/d))+1/4/(d*x+c)^(1/2)*sin(3/d*(d*x+c)*b+3*(a*d-b*c)/d)-1/4*b/d
*2^(1/2)*Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(cos(3*(a*d-b*c)/d)*FresnelC(2^(1/2)/
Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)-sin(3*(a*d-b*c)/d)*FresnelS
(2^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)))
```

maxima [C] time = 1.68, size = 252, normalized size = 0.93

$$\frac{\sqrt{3}\left(\left((i-1)\,\sqrt{2}\,\Gamma\left(-\frac{1}{2},\frac{3i(dx+c)b}{d}\right)-(i+1)\,\sqrt{2}\,\Gamma\left(-\frac{1}{2},-\frac{3i(dx+c)b}{d}\right)\right)\cos\left(-\frac{3(bc-ad)}{d}\right)+\left((i+1)\,\sqrt{2}\,\Gamma\left(-\frac{1}{2},\frac{3i(dx+c)b}{d}\right)-\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/16*(sqrt(3)*(((I - 1)*sqrt(2)*gamma(-1/2, 3*I*(d*x + c)*b/d) - (I + 1)*sq
rt(2)*gamma(-1/2, -3*I*(d*x + c)*b/d))*cos(-3*(b*c - a*d)/d) + ((I + 1)*sqr
t(2)*gamma(-1/2, 3*I*(d*x + c)*b/d) - (I - 1)*sqrt(2)*gamma(-1/2, -3*I*(d*x
 + c)*b/d))*sin(-3*(b*c - a*d)/d))*sqrt((d*x + c)*b/d) + ((-(3*I - 3)*sqrt(
2)*gamma(-1/2, I*(d*x + c)*b/d) + (3*I + 3)*sqrt(2)*gamma(-1/2, -I*(d*x + c
)*b/d))*cos(-(b*c - a*d)/d) + (-(3*I + 3)*sqrt(2)*gamma(-1/2, I*(d*x + c)*b
/d) + (3*I - 3)*sqrt(2)*gamma(-1/2, -I*(d*x + c)*b/d))*sin(-(b*c - a*d)/d))
*sqrt((d*x + c)*b/d))/(sqrt(d*x + c)*d)
```

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

$$\int \frac{\sin(a+b\,x)^3}{(c+d\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3/(c + d*x)^(3/2),x)
```

```
[Out] int(sin(a + b*x)^3/(c + d*x)^(3/2), x)
```

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

$$\int \frac{\sin^3(a+bx)}{(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3/(d*x+c)**(3/2),x)
```

```
[Out] Integral(sin(a + b*x)**3/(c + d*x)**(3/2), x)
```

3.58 $\int \frac{\sin^3(a+bx)}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=292

$$\frac{\sqrt{6\pi}\,b^{3/2}\sin\left(3a-\frac{3bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}}-\frac{\sqrt{2\pi}\,b^{3/2}\sin\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}}-\frac{\sqrt{2\pi}\,b^{3/2}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{}}{}\right.}{d^{5/2}}$$

```
[Out] -2/3*sin(b*x+a)^3/d/(d*x+c)^(3/2)-b^(3/2)*cos(a-b*c/d)*FresnelS(b^(1/2)*2^(
1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/d^(5/2)-b^(3/2)*Fresn
elC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*sin(a-b*c/d)*2^(1/2)*Pi
^(1/2)/d^(5/2)+b^(3/2)*cos(3*a-3*b*c/d)*FresnelS(b^(1/2)*6^(1/2)/Pi^(1/2)*(
d*x+c)^(1/2)/d^(1/2))*6^(1/2)*Pi^(1/2)/d^(5/2)+b^(3/2)*FresnelC(b^(1/2)*6^(
1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*sin(3*a-3*b*c/d)*6^(1/2)*Pi^(1/2)/d^(5
/2)-4*b*cos(b*x+a)*sin(b*x+a)^2/d^2/(d*x+c)^(1/2)
```

Rubi [A] time = 0.71, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3314, 3306, 3305, 3351, 3304, 3352, 3312}

$$\frac{\sqrt{6\pi}\,b^{3/2}\sin\left(3a-\frac{3bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}}-\frac{\sqrt{2\pi}\,b^{3/2}\sin\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}}-\frac{\sqrt{2\pi}\,b^{3/2}\cos}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3/(c + d*x)^(5/2),x]
```

```
[Out] -((b^(3/2)*Sqrt[2*Pi]*Cos[a - (b*c)/d]*FresnelS[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c
+ d*x])/Sqrt[d]])/d^(5/2)) + (b^(3/2)*Sqrt[6*Pi]*Cos[3*a - (3*b*c)/d]*Fresn
elS[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]])/d^(5/2) + (b^(3/2)*Sqrt[6*
Pi]*FresnelC[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[3*a - (3*b*c)/
d])/d^(5/2) - (b^(3/2)*Sqrt[2*Pi]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c + d*x
])/Sqrt[d]]*Sin[a - (b*c)/d])/d^(5/2) - (4*b*Cos[a + b*x]*Sin[a + b*x]^2)/(
d^2*Sqrt[c + d*x]) - (2*Sin[a + b*x]^3)/(3*d*(c + d*x)^(3/2))
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin^3(a+bx)}{(c+dx)^{5/2}}\,dx = -\frac{4b\cos(a+bx)\sin^2(a+bx)}{d^2\sqrt{c+dx}} - \frac{2\sin^3(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(8b^2\right)\int \frac{\sin(a+bx)}{\sqrt{c+dx}}\,dx}{d^2} - \frac{\left(12b^2\right)\int \frac{\sin^3(a+bx)}{\sqrt{c+dx}}$$

$$= -\frac{4b\cos(a+bx)\sin^2(a+bx)}{d^2\sqrt{c+dx}} - \frac{2\sin^3(a+bx)}{3d(c+dx)^{3/2}} - \frac{\left(12b^2\right)\int \left(\frac{3\sin(a+bx)}{4\sqrt{c+dx}} - \frac{\sin(3a+3bx)}{4\sqrt{c+dx}}\right)dx}{d^2} +$$

$$= -\frac{4b\cos(a+bx)\sin^2(a+bx)}{d^2\sqrt{c+dx}} - \frac{2\sin^3(a+bx)}{3d(c+dx)^{3/2}} + \frac{\left(3b^2\right)\int \frac{\sin(3a+3bx)}{\sqrt{c+dx}}\,dx}{d^2} - \frac{\left(9b^2\right)\int \frac{\sin(a+bx)}{\sqrt{c+dx}}$$

$$= \frac{8b^{3/2}\sqrt{2\pi}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}} + \frac{8b^{3/2}\sqrt{2\pi}\,C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)\sin\left(a-\frac{bc}{d}\right)}{d^{5/2}} - \frac{4b\cos}{}$$

$$= \frac{8b^{3/2}\sqrt{2\pi}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}} + \frac{8b^{3/2}\sqrt{2\pi}\,C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)\sin\left(a-\frac{bc}{d}\right)}{d^{5/2}} - \frac{4b\cos}{}$$

$$= -\frac{b^{3/2}\sqrt{2\pi}\cos\left(a-\frac{bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}} + \frac{b^{3/2}\sqrt{6\pi}\cos\left(3a-\frac{3bc}{d}\right)S\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{d^{5/2}} + \frac{b^{3/2}}{}$$

Mathematica [A] time = 2.42, size = 496, normalized size = 1.70

$$\frac{6\sqrt{6\pi}\,bdx\sqrt{\frac{b}{d}}\sqrt{c+dx}\sin\left(3a-\frac{3bc}{d}\right)C\left(\sqrt{\frac{b}{d}}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}\right) + 6\sqrt{6\pi}\,bc\sqrt{\frac{b}{d}}\sqrt{c+dx}\sin\left(3a-\frac{3bc}{d}\right)C\left(\sqrt{\frac{b}{d}}\sqrt{\frac{6}{\pi}}\sqrt{c}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3/(c + d*x)^(5/2),x]
```

```
[Out] (-6*b*c*Cos[a + b*x] - 6*b*d*x*Cos[a + b*x] + 6*b*c*Cos[3*(a + b*x)] + 6*b*
d*x*Cos[3*(a + b*x)] - 6*b*Sqrt[b/d]*Sqrt[2*Pi]*(c + d*x)^(3/2)*Cos[a - (b*
c)/d]*FresnelS[Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c + d*x]] + 6*b*Sqrt[b/d]*Sqrt[6*P
i]*(c + d*x)^(3/2)*Cos[3*a - (3*b*c)/d]*FresnelS[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[
c + d*x]] + 6*b*c*Sqrt[b/d]*Sqrt[6*Pi]*Sqrt[c + d*x]*FresnelC[Sqrt[b/d]*Sqr
t[6/Pi]*Sqrt[c + d*x]]*Sin[3*a - (3*b*c)/d] + 6*b*Sqrt[b/d]*d*Sqrt[6*Pi]*x*
Sqrt[c + d*x]*FresnelC[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[c + d*x]]*Sin[3*a - (3*b*c
)/d] - 6*b*c*Sqrt[b/d]*Sqrt[2*Pi]*Sqrt[c + d*x]*FresnelC[Sqrt[b/d]*Sqrt[2/P
i]*Sqrt[c + d*x]]*Sin[a - (b*c)/d] - 6*b*Sqrt[b/d]*d*Sqrt[2*Pi]*x*Sqrt[c +
```

```
d*x]*FresnelC[Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c + d*x]]*Sin[a - (b*c)/d] - 3*d*Si
n[a + b*x] + d*Sin[3*(a + b*x)])/(6*d^2*(c + d*x)^(3/2))
```

fricas [A] time = 0.93, size = 388, normalized size = 1.33

$$\frac{3\sqrt{6}\left(\pi b d^2x^2+2\,\pi bcdx+\pi bc^2\right)\sqrt{\frac{b}{\pi d}}\,\cos\left(-\frac{3\,(bc-ad)}{d}\right)\mathrm{S}\left(\sqrt{6}\sqrt{dx+c}\,\sqrt{\frac{b}{\pi d}}\right)-3\sqrt{2}\left(\pi bd^2x^2+2\,\pi bcdx+\pi bc^2\right)\sqrt{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3*(3*sqrt(6)*(pi*b*d^2*x^2 + 2*pi*b*c*d*x + pi*b*c^2)*sqrt(b/(pi*d))*cos(
-3*(b*c - a*d)/d)*fresnel_sin(sqrt(6)*sqrt(d*x + c)*sqrt(b/(pi*d))) - 3*sqr
t(2)*(pi*b*d^2*x^2 + 2*pi*b*c*d*x + pi*b*c^2)*sqrt(b/(pi*d))*cos(-(b*c - a*
d)/d)*fresnel_sin(sqrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d))) - 3*sqrt(2)*(pi*b*d
^2*x^2 + 2*pi*b*c*d*x + pi*b*c^2)*sqrt(b/(pi*d))*fresnel_cos(sqrt(2)*sqrt(d
*x + c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d)/d) + 3*sqrt(6)*(pi*b*d^2*x^2 + 2*p
i*b*c*d*x + pi*b*c^2)*sqrt(b/(pi*d))*fresnel_cos(sqrt(6)*sqrt(d*x + c)*sqrt
(b/(pi*d)))*sin(-3*(b*c - a*d)/d) + 2*(6*(b*d*x + b*c)*cos(b*x + a)^3 - 6*(
b*d*x + b*c)*cos(b*x + a) + (d*cos(b*x + a)^2 - d)*sin(b*x + a))*sqrt(d*x +
 c))/(d^4*x^2 + 2*c*d^3*x + c^2*d^2)
```

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

$$\int \frac{\sin\left(bx+a\right)^3}{\left(dx+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^3/(d*x + c)^(5/2), x)
```

maple [A] time = 0.02, size = 368, normalized size = 1.26

$$\frac{-\frac{\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{2(dx+c)^{\frac{3}{2}}}+\frac{b\left(-\frac{\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{\sqrt{dx+c}}-\frac{b\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)+\sin\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{d\sqrt{\frac{b}{d}}}\right)}{d}+\frac{\sin\left(\frac{3(dx+c)b}{d}+\frac{3da-3cb}{d}\right)}{6(dx+c)^{\frac{3}{2}}}-\cdots}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3/(d*x+c)^(5/2),x)
```

```
[Out] 2/d*(-1/4/(d*x+c)^(3/2)*sin(1/d*(d*x+c)*b+(a*d-b*c)/d)+1/2*b/d*(-1/(d*x+c)^
(1/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)-b/d*2^(1/2)*Pi^(1/2)/(b/d)^(1/2)*(cos(
(a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)+sin((
a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)))+1/12
/(d*x+c)^(3/2)*sin(3/d*(d*x+c)*b+3*(a*d-b*c)/d)-1/2*b/d*(-1/(d*x+c)^(1/2)*c
os(3/d*(d*x+c)*b+3*(a*d-b*c)/d)-b/d*2^(1/2)*Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(c
os(3*(a*d-b*c)/d)*FresnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/
2)*b/d)+sin(3*(a*d-b*c)/d)*FresnelC(2^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(d
*x+c)^(1/2)*b/d))))
```

maxima [C] time = 1.02, size = 253, normalized size = 0.87

$$\frac{3\sqrt{3}\left(\left(-(i+1)\sqrt{2}\,\Gamma\left(-\frac{3}{2},\frac{3i(dx+c)b}{d}\right)+(i-1)\sqrt{2}\,\Gamma\left(-\frac{3}{2},-\frac{3i(dx+c)b}{d}\right)\right)\cos\left(-\frac{3(bc-ad)}{d}\right)+\left((i-1)\sqrt{2}\,\Gamma\left(-\frac{3}{2},\frac{3i(dx+c)}{d}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/16*(3*sqrt(3)*((-(I + 1)*sqrt(2)*gamma(-3/2, 3*I*(d*x + c)*b/d) + (I - 1)
*sqrt(2)*gamma(-3/2, -3*I*(d*x + c)*b/d))*cos(-3*(b*c - a*d)/d) + ((I - 1)*
sqrt(2)*gamma(-3/2, 3*I*(d*x + c)*b/d) - (I + 1)*sqrt(2)*gamma(-3/2, -3*I*(
d*x + c)*b/d))*sin(-3*(b*c - a*d)/d))*((d*x + c)*b/d)^(3/2) + (((3*I + 3)*s
qrt(2)*gamma(-3/2, I*(d*x + c)*b/d) - (3*I - 3)*sqrt(2)*gamma(-3/2, -I*(d*x
 + c)*b/d))*cos(-(b*c - a*d)/d) + (-(3*I - 3)*sqrt(2)*gamma(-3/2, I*(d*x +
c)*b/d) + (3*I + 3)*sqrt(2)*gamma(-3/2, -I*(d*x + c)*b/d))*sin(-(b*c - a*d)
/d))*((d*x + c)*b/d)^(3/2))/((d*x + c)^(3/2)*d)
```

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

$$\int \frac{\sin(a+b\,x)^3}{(c+d\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3/(c + d*x)^(5/2),x)
```

```
[Out] int(sin(a + b*x)^3/(c + d*x)^(5/2), x)
```

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

$$\int \frac{\sin^3(a+bx)}{(c+dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3/(d*x+c)**(5/2),x)
```

```
[Out] Integral(sin(a + b*x)**3/(c + d*x)**(5/2), x)
```

3.59 $\int \frac{\sin^3(a+bx)}{(c+dx)^{7/2}}\,dx$

Optimal. Leaf size=356

$$-\frac{2\sqrt{2\pi}\,b^{5/2}\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}}+\frac{6\sqrt{6\pi}\,b^{5/2}\cos\left(3a-\frac{3bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}}-\frac{6\sqrt{6\pi}\,b^{5/2}\sin\left(3a-\frac{3bc}{d}\right)}{5d^{7/2}}$$

```
[Out] -4/5*b*cos(b*x+a)*sin(b*x+a)^2/d^2/(d*x+c)^(3/2)-2/5*sin(b*x+a)^3/d/(d*x+c)
^(5/2)-2/5*b^(5/2)*cos(a-b*c/d)*FresnelC(b^(1/2)*2^(1/2)/Pi^(1/2)*(d*x+c)^(
1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/d^(7/2)+2/5*b^(5/2)*FresnelS(b^(1/2)*2^(1/2)
/Pi^(1/2)*(d*x+c)^(1/2)/d^(1/2))*sin(a-b*c/d)*2^(1/2)*Pi^(1/2)/d^(7/2)+6/5*
b^(5/2)*cos(3*a-3*b*c/d)*FresnelC(b^(1/2)*6^(1/2)/Pi^(1/2)*(d*x+c)^(1/2)/d^
(1/2))*6^(1/2)*Pi^(1/2)/d^(7/2)-6/5*b^(5/2)*FresnelS(b^(1/2)*6^(1/2)/Pi^(1/
2)*(d*x+c)^(1/2)/d^(1/2))*sin(3*a-3*b*c/d)*6^(1/2)*Pi^(1/2)/d^(7/2)-16/5*b^
2*sin(b*x+a)/d^3/(d*x+c)^(1/2)+24/5*b^2*sin(b*x+a)^3/d^3/(d*x+c)^(1/2)
```

Rubi [A] time = 0.80, antiderivative size = 356, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {3314, 3297, 3306, 3305, 3351, 3304, 3352, 3313}

$$-\frac{2\sqrt{2\pi}\,b^{5/2}\cos\left(a-\frac{bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}}+\frac{6\sqrt{6\pi}\,b^{5/2}\cos\left(3a-\frac{3bc}{d}\right)\text{FresnelC}\left(\frac{\sqrt{\frac{6}{\pi}}\sqrt{b}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}}-6\sqrt{6\pi}\,b^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[a + b*x]^3/(c + d*x)^(7/2),x]
```

```
[Out] (-2*b^(5/2)*Sqrt[2*Pi]*Cos[a - (b*c)/d]*FresnelC[(Sqrt[b]*Sqrt[2/Pi]*Sqrt[c
 + d*x])/Sqrt[d]])/(5*d^(7/2)) + (6*b^(5/2)*Sqrt[6*Pi]*Cos[3*a - (3*b*c)/d]
*FresnelC[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]])/(5*d^(7/2)) - (6*b^(
5/2)*Sqrt[6*Pi]*FresnelS[(Sqrt[b]*Sqrt[6/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[3*
a - (3*b*c)/d])/(5*d^(7/2)) + (2*b^(5/2)*Sqrt[2*Pi]*FresnelS[(Sqrt[b]*Sqrt[
2/Pi]*Sqrt[c + d*x])/Sqrt[d]]*Sin[a - (b*c)/d])/(5*d^(7/2)) - (16*b^2*Sin[a
 + b*x])/(5*d^3*Sqrt[c + d*x]) - (4*b*Cos[a + b*x]*Sin[a + b*x]^2)/(5*d^2*(
c + d*x)^(3/2)) - (2*Sin[a + b*x]^3)/(5*d*(c + d*x)^(5/2)) + (24*b^2*Sin[a
+ b*x]^3)/(5*d^3*Sqrt[c + d*x])
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
```

```
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3306

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[Cos
[(d*e - c*f)/d], Int[Sin[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] + Dist[Sin[(d
*e - c*f)/d], Int[Cos[(c*f)/d + f*x]/Sqrt[c + d*x], x], x] /; FreeQ[{c, d,
e, f}, x] && ComplexFreeQ[f] && NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin^3(a+bx)}{(c+dx)^{7/2}}\,dx = -\frac{4b\cos(a+bx)\sin^2(a+bx)}{5d^2(c+dx)^{3/2}} - \frac{2\sin^3(a+bx)}{5d(c+dx)^{5/2}} + \frac{\left(8b^2\right)\int \frac{\sin(a+bx)}{(c+dx)^{3/2}}\,dx}{5d^2} - \frac{\left(12b^2\right)\int \frac{\sin^3(a+bx)}{(c+dx)^{3/2}}\cdots}{5d^2}\cdots$$

$$= -\frac{16b^2\sin(a+bx)}{5d^3\sqrt{c+dx}} - \frac{4b\cos(a+bx)\sin^2(a+bx)}{5d^2(c+dx)^{3/2}} - \frac{2\sin^3(a+bx)}{5d(c+dx)^{5/2}} + \frac{24b^2\sin^3(a+bx)}{5d^3\sqrt{c+dx}} + \cdots$$

$$= -\frac{16b^2\sin(a+bx)}{5d^3\sqrt{c+dx}} - \frac{4b\cos(a+bx)\sin^2(a+bx)}{5d^2(c+dx)^{3/2}} - \frac{2\sin^3(a+bx)}{5d(c+dx)^{5/2}} + \frac{24b^2\sin^3(a+bx)}{5d^3\sqrt{c+dx}} - \cdots$$

$$= -\frac{16b^2\sin(a+bx)}{5d^3\sqrt{c+dx}} - \frac{4b\cos(a+bx)\sin^2(a+bx)}{5d^2(c+dx)^{3/2}} - \frac{2\sin^3(a+bx)}{5d(c+dx)^{5/2}} + \frac{24b^2\sin^3(a+bx)}{5d^3\sqrt{c+dx}} + \cdots$$

$$= \frac{16b^{5/2}\sqrt{2\pi}\,\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}} - \frac{16b^{5/2}\sqrt{2\pi}\,S\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)\sin\left(a-\frac{bc}{d}\right)}{5d^{7/2}} - \frac{16b\cdots}{5\cdots}$$

$$= -\frac{2b^{5/2}\sqrt{2\pi}\,\cos\left(a-\frac{bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{2}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}} + \frac{6b^{5/2}\sqrt{6\pi}\,\cos\left(3a-\frac{3bc}{d}\right)C\left(\frac{\sqrt{b}\sqrt{\frac{6}{\pi}}\sqrt{c+dx}}{\sqrt{d}}\right)}{5d^{7/2}} - \frac{6\cdots}{\cdots}$$

Mathematica [B] time = 6.40, size = 1429, normalized size = 4.01

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[Sin[a + b*x]^3/(c + d*x)^(7/2),x]
```

```
[Out] (3*(Cos[a]*((2*(b/d)^(5/2)*Sin[(b*c)/d]*(Cos[(b*(c + d*x))/d]/((b/d)^(5/2)*
(c + d*x)^(5/2)) - (2*(2*(Cos[(b*(c + d*x))/d]/(Sqrt[b/d]*Sqrt[c + d*x]) +
Sqrt[2*Pi]*FresnelS[Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c + d*x]]) + Sin[(b*(c + d*x)
)/d]/((b/d)^(3/2)*(c + d*x)^(3/2))))/3))/(5*d) - (2*(b/d)^(5/2)*Cos[(b*c)/d
]*(Sin[(b*(c + d*x))/d]/((b/d)^(5/2)*(c + d*x)^(5/2)) + (2*(Cos[(b*(c + d*x
```

```
))/d]/((b/d)^(3/2)*(c + d*x)^(3/2)) - 2*(-(Sqrt[2*Pi]*FresnelC[Sqrt[b/d]*Sq
rt[2/Pi]*Sqrt[c + d*x]]) + Sin[(b*(c + d*x))/d]/(Sqrt[b/d]*Sqrt[c + d*x])))
)/3))/(5*d)) + Sin[a]*((-2*(b/d)^(5/2)*Cos[(b*c)/d]*(Cos[(b*(c + d*x))/d]/(
(b/d)^(5/2)*(c + d*x)^(5/2)) - (2*(2*(Cos[(b*(c + d*x))/d]/(Sqrt[b/d]*Sqrt[
c + d*x]) + Sqrt[2*Pi]*FresnelS[Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c + d*x]]) + Sin[
(b*(c + d*x))/d]/((b/d)^(3/2)*(c + d*x)^(3/2))))/3))/(5*d) - (2*(b/d)^(5/2)
*Sin[(b*c)/d]*(Sin[(b*(c + d*x))/d]/((b/d)^(5/2)*(c + d*x)^(5/2)) + (2*(Cos
[(b*(c + d*x))/d]/((b/d)^(3/2)*(c + d*x)^(3/2)) - 2*(-(Sqrt[2*Pi]*FresnelC[
Sqrt[b/d]*Sqrt[2/Pi]*Sqrt[c + d*x]]) + Sin[(b*(c + d*x))/d]/(Sqrt[b/d]*Sqrt
[c + d*x]))))/3))/(5*d))))/4 + (-(Cos[3*a]*((18*Sqrt[3]*(b/d)^(5/2)*Sin[(3*
b*c)/d]*(Cos[(3*b*(c + d*x))/d]/(9*Sqrt[3]*(b/d)^(5/2)*(c + d*x)^(5/2)) - (
2*(2*(Cos[(3*b*(c + d*x))/d]/(Sqrt[3]*Sqrt[b/d]*Sqrt[c + d*x]) + Sqrt[2*Pi]
*FresnelS[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[c + d*x]]) + Sin[(3*b*(c + d*x))/d]/(3*
Sqrt[3]*(b/d)^(3/2)*(c + d*x)^(3/2))))/3))/(5*d) - (18*Sqrt[3]*(b/d)^(5/2)*
Cos[(3*b*c)/d]*(Sin[(3*b*(c + d*x))/d]/(9*Sqrt[3]*(b/d)^(5/2)*(c + d*x)^(5/
2)) + (2*(Cos[(3*b*(c + d*x))/d]/(3*Sqrt[3]*(b/d)^(3/2)*(c + d*x)^(3/2)) -
2*(-(Sqrt[2*Pi]*FresnelC[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[c + d*x]]) + Sin[(3*b*(c
 + d*x))/d]/(Sqrt[3]*Sqrt[b/d]*Sqrt[c + d*x]))))/3))/(5*d))) - Sin[3*a]*((-
18*Sqrt[3]*(b/d)^(5/2)*Cos[(3*b*c)/d]*(Cos[(3*b*(c + d*x))/d]/(9*Sqrt[3]*(b
/d)^(5/2)*(c + d*x)^(5/2)) - (2*(2*(Cos[(3*b*(c + d*x))/d]/(Sqrt[3]*Sqrt[b/
d]*Sqrt[c + d*x]) + Sqrt[2*Pi]*FresnelS[Sqrt[b/d]*Sqrt[6/Pi]*Sqrt[c + d*x]]
) + Sin[(3*b*(c + d*x))/d]/(3*Sqrt[3]*(b/d)^(3/2)*(c + d*x)^(3/2))))/3))/(5
*d) - (18*Sqrt[3]*(b/d)^(5/2)*Sin[(3*b*c)/d]*(Sin[(3*b*(c + d*x))/d]/(9*Sqr
t[3]*(b/d)^(5/2)*(c + d*x)^(5/2)) + (2*(Cos[(3*b*(c + d*x))/d]/(3*Sqrt[3]*(
b/d)^(3/2)*(c + d*x)^(3/2)) - 2*(-(Sqrt[2*Pi]*FresnelC[Sqrt[b/d]*Sqrt[6/Pi]
*Sqrt[c + d*x]]) + Sin[(3*b*(c + d*x))/d]/(Sqrt[3]*Sqrt[b/d]*Sqrt[c + d*x])
)))/3))/(5*d)))/4
```

fricas [A] time = 0.74, size = 549, normalized size = 1.54

$$\frac{2\left(3\sqrt{6}\left(\pi b^2d^3x^3+3\pi b^2cd^2x^2+3\pi b^2c^2dx+\pi b^2c^3\right)\sqrt{\frac{b}{\pi d}}\cos\left(-\frac{3(bc-ad)}{d}\right)C\left(\sqrt{6}\sqrt{dx+c}\sqrt{\frac{b}{\pi d}}\right)-\sqrt{2}\left(\pi b^2d^3x^3\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/5*(3*sqrt(6)*(pi*b^2*d^3*x^3 + 3*pi*b^2*c*d^2*x^2 + 3*pi*b^2*c^2*d*x + pi
*b^2*c^3)*sqrt(b/(pi*d))*cos(-3*(b*c - a*d)/d)*fresnel_cos(sqrt(6)*sqrt(d*x
 + c)*sqrt(b/(pi*d))) - sqrt(2)*(pi*b^2*d^3*x^3 + 3*pi*b^2*c*d^2*x^2 + 3*pi
*b^2*c^2*d*x + pi*b^2*c^3)*sqrt(b/(pi*d))*cos(-(b*c - a*d)/d)*fresnel_cos(s
qrt(2)*sqrt(d*x + c)*sqrt(b/(pi*d))) + sqrt(2)*(pi*b^2*d^3*x^3 + 3*pi*b^2*c
*d^2*x^2 + 3*pi*b^2*c^2*d*x + pi*b^2*c^3)*sqrt(b/(pi*d))*fresnel_sin(sqrt(2
)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-(b*c - a*d)/d) - 3*sqrt(6)*(pi*b^2*d^3
*x^3 + 3*pi*b^2*c*d^2*x^2 + 3*pi*b^2*c^2*d*x + pi*b^2*c^3)*sqrt(b/(pi*d))*f
```

```
resnel_sin(sqrt(6)*sqrt(d*x + c)*sqrt(b/(pi*d)))*sin(-3*(b*c - a*d)/d) + (2
*(b*d^2*x + b*c*d)*cos(b*x + a)^3 - 2*(b*d^2*x + b*c*d)*cos(b*x + a) + (4*b
^2*d^2*x^2 + 8*b^2*c*d*x + 4*b^2*c^2 - (12*b^2*d^2*x^2 + 24*b^2*c*d*x + 12*
b^2*c^2 - d^2)*cos(b*x + a)^2 - d^2)*sin(b*x + a))*sqrt(d*x + c))/(d^6*x^3
+ 3*c*d^5*x^2 + 3*c^2*d^4*x + c^3*d^3)
```

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

$$\int \frac{\sin(bx+a)^3}{(dx+c)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sin(b*x + a)^3/(d*x + c)^(7/2), x)
```

maple [A] time = 0.02, size = 450, normalized size = 1.26

$$-\frac{3\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{10(dx+c)^{\frac{5}{2}}}+\frac{3b\left(-\frac{\cos\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{3(dx+c)^{\frac{3}{2}}}-\frac{2b\left(-\frac{\sin\left(\frac{(dx+c)b}{d}+\frac{da-cb}{d}\right)}{\sqrt{dx+c}}+\frac{b\sqrt{2}\,\sqrt{\pi}\left(\cos\left(\frac{da-cb}{d}\right)\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)-\sin\left(\frac{da-cb}{d}\right)\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx+c}\,b}{\sqrt{\pi}\,\sqrt{\frac{b}{d}}\,d}\right)\right)}{d\sqrt{\frac{b}{d}}}\right)}{3d}\right)}{5d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(b*x+a)^3/(d*x+c)^(7/2),x)
```

```
[Out] 2/d*(-3/20/(d*x+c)^(5/2)*sin(1/d*(d*x+c)*b+(a*d-b*c)/d)+3/10*b/d*(-1/3/(d*x
+c)^(3/2)*cos(1/d*(d*x+c)*b+(a*d-b*c)/d)-2/3*b/d*(-1/(d*x+c)^(1/2)*sin(1/d*
(d*x+c)*b+(a*d-b*c)/d)+b/d*2^(1/2)*Pi^(1/2)/(b/d)^(1/2)*(cos((a*d-b*c)/d)*F
resnelC(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)-sin((a*d-b*c)/d)*Fr
esnelS(2^(1/2)/Pi^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d))))+1/20/(d*x+c)^(5/2
)*sin(3/d*(d*x+c)*b+3*(a*d-b*c)/d)-3/10*b/d*(-1/3/(d*x+c)^(3/2)*cos(3/d*(d*
x+c)*b+3*(a*d-b*c)/d)-2*b/d*(-1/(d*x+c)^(1/2)*sin(3/d*(d*x+c)*b+3*(a*d-b*c)
/d)+b/d*2^(1/2)*Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(cos(3*(a*d-b*c)/d)*FresnelC(2
```

```
^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)-sin(3*(a*d-b*c)/d)*F
resnelS(2^(1/2)/Pi^(1/2)*3^(1/2)/(b/d)^(1/2)*(d*x+c)^(1/2)*b/d)))))
```

maxima [C] time = 2.40, size = 253, normalized size = 0.71

$$-\frac{9\sqrt{3}\left(\left((i-1)\sqrt{2}\,\Gamma\left(-\frac{5}{2},\frac{3i(dx+c)b}{d}\right)-(i+1)\sqrt{2}\,\Gamma\left(-\frac{5}{2},-\frac{3i(dx+c)b}{d}\right)\right)\cos\left(-\frac{3(bc-ad)}{d}\right)+\left((i+1)\sqrt{2}\,\Gamma\left(-\frac{5}{2},\frac{3i(dx+c)b}{d}\right)\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)^3/(d*x+c)^(7/2),x, algorithm="maxima")
```

```
[Out] -1/16*(9*sqrt(3)*(((I - 1)*sqrt(2)*gamma(-5/2, 3*I*(d*x + c)*b/d) - (I + 1)
*sqrt(2)*gamma(-5/2, -3*I*(d*x + c)*b/d))*cos(-3*(b*c - a*d)/d) + ((I + 1)*
sqrt(2)*gamma(-5/2, 3*I*(d*x + c)*b/d) - (I - 1)*sqrt(2)*gamma(-5/2, -3*I*(
d*x + c)*b/d))*sin(-3*(b*c - a*d)/d))*((d*x + c)*b/d)^(5/2) + ((-(3*I - 3)*
sqrt(2)*gamma(-5/2, I*(d*x + c)*b/d) + (3*I + 3)*sqrt(2)*gamma(-5/2, -I*(d*
x + c)*b/d))*cos(-(b*c - a*d)/d) + (-(3*I + 3)*sqrt(2)*gamma(-5/2, I*(d*x +
 c)*b/d) + (3*I - 3)*sqrt(2)*gamma(-5/2, -I*(d*x + c)*b/d))*sin(-(b*c - a*d
)/d))*((d*x + c)*b/d)^(5/2))/((d*x + c)^(5/2)*d)
```

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

$$\int \frac{\sin(a+b\,x)^3}{(c+d\,x)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3/(c + d*x)^(7/2),x)
```

```
[Out] int(sin(a + b*x)^3/(c + d*x)^(7/2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(b*x+a)**3/(d*x+c)**(7/2),x)
```

```
[Out] Timed out
```

3.60 $\int (dx)^{3/2} \sin(fx)\, dx$

Optimal. Leaf size=87

$$-\frac{3\sqrt{\frac{\pi}{2}}\, d^{3/2} S\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{2f^{5/2}}+\frac{3d\sqrt{dx}\,\sin(fx)}{2f^2}-\frac{(dx)^{3/2}\cos(fx)}{f}$$

```
[Out] -(d*x)^(3/2)*cos(f*x)/f-3/4*d^(3/2)*FresnelS(f^(1/2)*2^(1/2)/Pi^(1/2)*(d*x)
^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/f^(5/2)+3/2*d*sin(f*x)*(d*x)^(1/2)/f^2
```

Rubi [A] time = 0.11, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3296, 3305, 3351}

$$-\frac{3\sqrt{\frac{\pi}{2}}\, d^{3/2} S\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{2f^{5/2}}+\frac{3d\sqrt{dx}\,\sin(fx)}{2f^2}-\frac{(dx)^{3/2}\cos(fx)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(d*x)^(3/2)*Sin[f*x],x]
```

```
[Out] -(((d*x)^(3/2)*Cos[f*x])/f) - (3*d^(3/2)*Sqrt[Pi/2]*FresnelS[(Sqrt[f]*Sqrt[
2/Pi]*Sqrt[d*x])/Sqrt[d]])/(2*f^(5/2)) + (3*d*Sqrt[d*x]*Sin[f*x])/(2*f^2)
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int (dx)^{3/2}\sin(fx)\,dx = -\frac{(dx)^{3/2}\cos(fx)}{f}+\frac{(3d)\int \sqrt{dx}\,\cos(fx)\,dx}{2f}$$
$$= -\frac{(dx)^{3/2}\cos(fx)}{f}+\frac{3d\sqrt{dx}\,\sin(fx)}{2f^2}-\frac{\left(3d^2\right)\int \frac{\sin(fx)}{\sqrt{dx}}\,dx}{4f^2}$$
$$= -\frac{(dx)^{3/2}\cos(fx)}{f}+\frac{3d\sqrt{dx}\,\sin(fx)}{2f^2}-\frac{(3d)\,\mathrm{Subst}\left(\int \sin\left(\frac{fx^2}{d}\right)dx, x, \sqrt{dx}\right)}{2f^2}$$
$$= -\frac{(dx)^{3/2}\cos(fx)}{f}-\frac{3d^{3/2}\sqrt{\frac{\pi}{2}}\,S\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{2f^{5/2}}+\frac{3d\sqrt{dx}\,\sin(fx)}{2f^2}$$

Mathematica [C] time = 0.01, size = 60, normalized size = 0.69

$$\frac{d^2\left(\sqrt{-ifx}\,\Gamma\left(\frac{5}{2},-ifx\right)+\sqrt{ifx}\,\Gamma\left(\frac{5}{2},ifx\right)\right)}{2f^3\sqrt{dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d*x)^(3/2)*Sin[f*x],x]
```

```
[Out] (d^2*(Sqrt[(-I)*f*x]*Gamma[5/2, (-I)*f*x] + Sqrt[I*f*x]*Gamma[5/2, I*f*x]))
/(2*f^3*Sqrt[d*x])
```

fricas [A] time = 0.75, size = 72, normalized size = 0.83

$$-\frac{3\sqrt{2}\,\pi d^2\sqrt{\frac{f}{\pi d}}\,\mathrm{S}\left(\sqrt{2}\sqrt{dx}\sqrt{\frac{f}{\pi d}}\right)+2\left(2\,df^2x\cos\left(fx\right)-3\,df\sin\left(fx\right)\right)\sqrt{dx}}{4\,f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)^(3/2)*sin(f*x),x, algorithm="fricas")
```

```
[Out] -1/4*(3*sqrt(2)*pi*d^2*sqrt(f/(pi*d))*fresnel_sin(sqrt(2)*sqrt(d*x)*sqrt(f/
(pi*d))) + 2*(2*d*f^2*x*cos(f*x) - 3*d*f*sin(f*x))*sqrt(d*x))/f^3
```

giac [C] time = 0.93, size = 220, normalized size = 2.53

$$-\frac{1}{8}\,d\left(\frac{-\frac{3i\sqrt{2}\sqrt{\pi}d^3\operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{df}\sqrt{dx}\left(\frac{idf}{\sqrt{d^2f^2}}+1\right)}{2d}\right)}{\sqrt{df}\left(\frac{idf}{\sqrt{d^2f^2}}+1\right)f^2}-\frac{2i\left(2i\sqrt{dx}\,d^2fx+3\sqrt{dx}\,d^2\right)e^{(-ifx)}}{f^2}}{d^2}+\frac{\frac{3i\sqrt{2}\sqrt{\pi}d^3\operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{df}\sqrt{dx}\left(-\frac{idf}{\sqrt{d^2f^2}}+1\right)}{2d}\right)}{\sqrt{df}\left(-\frac{idf}{\sqrt{d^2f^2}}+1\right)f^2}-\frac{2i\left(2\right.}{}}{d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)^(3/2)*sin(f*x),x, algorithm="giac")
```

```
[Out] -1/8*d*((-3*I*sqrt(2)*sqrt(pi)*d^3*erf(-1/2*sqrt(2)*sqrt(d*f)*sqrt(d*x)*(I*
d*f/sqrt(d^2*f^2) + 1)/d)/(sqrt(d*f)*(I*d*f/sqrt(d^2*f^2) + 1)*f^2) - 2*I*(
2*I*sqrt(d*x)*d^2*f*x + 3*sqrt(d*x)*d^2)*e^(-I*f*x)/f^2)/d^2 + (3*I*sqrt(2)
*sqrt(pi)*d^3*erf(-1/2*sqrt(2)*sqrt(d*f)*sqrt(d*x)*(-I*d*f/sqrt(d^2*f^2) +
1)/d)/(sqrt(d*f)*(-I*d*f/sqrt(d^2*f^2) + 1)*f^2) - 2*I*(2*I*sqrt(d*x)*d^2*f
*x - 3*sqrt(d*x)*d^2)*e^(I*f*x)/f^2)/d^2)
```

maple [A] time = 0.02, size = 87, normalized size = 1.00

$$\frac{-\frac{d(dx)^{\frac{3}{2}}\cos(fx)}{f}+\frac{3d\left(\frac{d\sqrt{dx}\,\sin(fx)}{2f}-\frac{d\sqrt{2}\,\sqrt{\pi}\,\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx}\,f}{\sqrt{\pi}\,\sqrt{\frac{f}{d}}\,d}\right)}{4f\sqrt{\frac{f}{d}}}\right)}{f}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x)^(3/2)*sin(f*x),x)
```

```
[Out] 2/d*(-1/2*d/f*(d*x)^(3/2)*cos(f*x)+3/2*d/f*(1/2*d/f*(d*x)^(1/2)*sin(f*x)-1/
4*d/f*2^(1/2)*Pi^(1/2)/(1/d*f)^(1/2)*FresnelS(2^(1/2)/Pi^(1/2)/(1/d*f)^(1/2
)*(d*x)^(1/2)/d*f))
```

maxima [C] time = 1.69, size = 106, normalized size = 1.22

$$-\frac{\sqrt{2}\left(8\sqrt{2}\,(dx)^{\frac{3}{2}}f^2\cos\left(fx\right)-12\sqrt{2}\sqrt{dx}\,df\sin\left(fx\right)+(3i+3)\sqrt{\pi}\,d^2\left(\frac{f^2}{d^2}\right)^{\frac{1}{4}}\operatorname{erf}\left(\sqrt{dx}\sqrt{\frac{if}{d}}\right)-(3i-3)\sqrt{\pi}\,d^2\left(\right.}{16f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)^(3/2)*sin(f*x),x, algorithm="maxima")
```

```
[Out] -1/16*sqrt(2)*(8*sqrt(2)*(d*x)^(3/2)*f^2*cos(f*x) - 12*sqrt(2)*sqrt(d*x)*d*
f*sin(f*x) + (3*I + 3)*sqrt(pi)*d^2*(f^2/d^2)^(1/4)*erf(sqrt(d*x)*sqrt(I*f/
d)) - (3*I - 3)*sqrt(pi)*d^2*(f^2/d^2)^(1/4)*erf(sqrt(d*x)*sqrt(-I*f/d)))/f
^3
```

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

$$\int \sin\left(f\,x\right)\,(d\,x)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x)*(d*x)^(3/2),x)
```

```
[Out] int(sin(f*x)*(d*x)^(3/2), x)
```

sympy [A] time = 21.83, size = 117, normalized size = 1.34

$$-\frac{7d^{\frac{3}{2}}x^{\frac{3}{2}}\cos\left(fx\right)\Gamma\left(\frac{7}{4}\right)}{4f\Gamma\left(\frac{11}{4}\right)}+\frac{21d^{\frac{3}{2}}\sqrt{x}\sin\left(fx\right)\Gamma\left(\frac{7}{4}\right)}{8f^2\Gamma\left(\frac{11}{4}\right)}-\frac{21\sqrt{2}\sqrt{\pi}\,d^{\frac{3}{2}}S\left(\frac{\sqrt{2}\sqrt{f}\sqrt{x}}{\sqrt{\pi}}\right)\Gamma\left(\frac{7}{4}\right)}{16f^{\frac{5}{2}}\Gamma\left(\frac{11}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)**(3/2)*sin(f*x),x)
```

```
[Out] -7*d**(3/2)*x**(3/2)*cos(f*x)*gamma(7/4)/(4*f*gamma(11/4)) + 21*d**(3/2)*sq
rt(x)*sin(f*x)*gamma(7/4)/(8*f**2*gamma(11/4)) - 21*sqrt(2)*sqrt(pi)*d**(3/
2)*fresnels(sqrt(2)*sqrt(f)*sqrt(x)/sqrt(pi))*gamma(7/4)/(16*f**(5/2)*gamma
(11/4))
```

3.61 $\int \sqrt{dx} \sin(fx) \, dx$

Optimal. Leaf size=65

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{d}\,C\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{f^{3/2}}-\frac{\sqrt{dx}\cos(fx)}{f}$$

```
[Out] 1/2*FresnelC(f^(1/2)*2^(1/2)/Pi^(1/2)*(d*x)^(1/2)/d^(1/2))*d^(1/2)*2^(1/2)*
Pi^(1/2)/f^(3/2)-cos(f*x)*(d*x)^(1/2)/f
```

Rubi [A] time = 0.06, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3296, 3304, 3352}

$$\frac{\sqrt{\frac{\pi}{2}}\sqrt{d}\,\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\sqrt{f}\sqrt{dx}}{\sqrt{d}}\right)}{f^{3/2}}-\frac{\sqrt{dx}\cos(fx)}{f}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d*x]*Sin[f*x],x]
```

```
[Out] -((Sqrt[d*x]*Cos[f*x])/f) + (Sqrt[d]*Sqrt[Pi/2]*FresnelC[(Sqrt[f]*Sqrt[2/Pi
]*Sqrt[d*x])/Sqrt[d]])/f^(3/2)
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \sqrt{dx}\,\sin(fx)\,dx = -\frac{\sqrt{dx}\,\cos(fx)}{f} + \frac{d\int \frac{\cos(fx)}{\sqrt{dx}}\,dx}{2f}$$

$$= -\frac{\sqrt{dx}\,\cos(fx)}{f} + \frac{\text{Subst}\left(\int \cos\left(\frac{fx^2}{d}\right)dx, x, \sqrt{dx}\right)}{f}$$

$$= -\frac{\sqrt{dx}\,\cos(fx)}{f} + \frac{\sqrt{d}\sqrt{\frac{\pi}{2}}\,C\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{f^{3/2}}$$

Mathematica [C] time = 0.01, size = 69, normalized size = 1.06

$$-\frac{\sqrt{dx}\,\Gamma\left(\frac{3}{2},-ifx\right)}{2f\sqrt{-ifx}} - \frac{\sqrt{dx}\,\Gamma\left(\frac{3}{2},ifx\right)}{2f\sqrt{ifx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d*x]*Sin[f*x],x]
```

```
[Out] -1/2*(Sqrt[d*x]*Gamma[3/2, (-I)*f*x])/(f*Sqrt[(-I)*f*x]) - (Sqrt[d*x]*Gamma
[3/2, I*f*x])/(2*f*Sqrt[I*f*x])
```

fricas [A] time = 0.81, size = 54, normalized size = 0.83

$$\frac{\sqrt{2}\,\pi d\sqrt{\frac{f}{\pi d}}\,\mathrm{C}\left(\sqrt{2}\sqrt{dx}\sqrt{\frac{f}{\pi d}}\right) - 2\sqrt{dx}\,f\cos\left(fx\right)}{2f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)^(1/2)*sin(f*x),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*pi*d*sqrt(f/(pi*d))*fresnel_cos(sqrt(2)*sqrt(d*x)*sqrt(f/(pi*d
))) - 2*sqrt(d*x)*f*cos(f*x))/f^2
```

giac [C] time = 0.76, size = 176, normalized size = 2.71

$$-\frac{\frac{\sqrt{2}\sqrt{\pi}d^2\operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{df}\sqrt{dx}\left(\frac{idf}{\sqrt{d^2f^2}}+1\right)}{2d}\right)}{\sqrt{df}\left(\frac{idf}{\sqrt{d^2f^2}}+1\right)f} + \frac{\sqrt{2}\sqrt{\pi}d^2\operatorname{erf}\left(-\frac{\sqrt{2}\sqrt{df}\sqrt{dx}\left(-\frac{idf}{\sqrt{d^2f^2}}+1\right)}{2d}\right)}{\sqrt{df}\left(-\frac{idf}{\sqrt{d^2f^2}}+1\right)f} + \frac{2\sqrt{dx}\,de^{(ifx)}}{f} + \frac{2\sqrt{dx}\,de^{(-ifx)}}{f}}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)^(1/2)*sin(f*x),x, algorithm="giac")
```

```
[Out] -1/4*(sqrt(2)*sqrt(pi)*d^2*erf(-1/2*sqrt(2)*sqrt(d*f)*sqrt(d*x)*(I*d*f/sqrt
(d^2*f^2) + 1)/d)/(sqrt(d*f)*(I*d*f/sqrt(d^2*f^2) + 1)*f) + sqrt(2)*sqrt(pi
)*d^2*erf(-1/2*sqrt(2)*sqrt(d*f)*sqrt(d*x)*(-I*d*f/sqrt(d^2*f^2) + 1)/d)/(s
qrt(d*f)*(-I*d*f/sqrt(d^2*f^2) + 1)*f) + 2*sqrt(d*x)*d*e^(I*f*x)/f + 2*sqrt
(d*x)*d*e^(-I*f*x)/f)/d
```

maple [A] time = 0.01, size = 65, normalized size = 1.00

$$\frac{-\frac{d\sqrt{dx}\,\cos(fx)}{f}+\frac{d\sqrt{2}\,\sqrt{\pi}\,\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx}\,f}{\sqrt{\pi}\,\sqrt{\frac{f}{d}}\,d}\right)}{2f\sqrt{\frac{f}{d}}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x)^(1/2)*sin(f*x),x)
```

```
[Out] 2/d*(-1/2*d/f*(d*x)^(1/2)*cos(f*x)+1/4*d/f*2^(1/2)*Pi^(1/2)/(1/d*f)^(1/2)*F
resnelC(2^(1/2)/Pi^(1/2)/(1/d*f)^(1/2)*(d*x)^(1/2)/d*f))
```

maxima [C] time = 0.52, size = 84, normalized size = 1.29

$$-\frac{\sqrt{2}\left(4\sqrt{2}\sqrt{dx}\,f\cos\left(fx\right)+(i-1)\,\sqrt{\pi}\,d\left(\frac{f^2}{d^2}\right)^{\frac{1}{4}}\mathrm{erf}\left(\sqrt{dx}\sqrt{\frac{if}{d}}\right)-(i+1)\,\sqrt{\pi}\,d\left(\frac{f^2}{d^2}\right)^{\frac{1}{4}}\mathrm{erf}\left(\sqrt{dx}\sqrt{-\frac{if}{d}}\right)\right)}{8f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)^(1/2)*sin(f*x),x, algorithm="maxima")
```

```
[Out] -1/8*sqrt(2)*(4*sqrt(2)*sqrt(d*x)*f*cos(f*x) + (I - 1)*sqrt(pi)*d*(f^2/d^2)
^(1/4)*erf(sqrt(d*x)*sqrt(I*f/d)) - (I + 1)*sqrt(pi)*d*(f^2/d^2)^(1/4)*erf(
sqrt(d*x)*sqrt(-I*f/d)))/f^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \sin\left(f\,x\right)\,\sqrt{d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x)*(d*x)^(1/2),x)
```

```
[Out] int(sin(f*x)*(d*x)^(1/2), x)
```

sympy [A] time = 2.10, size = 85, normalized size = 1.31

$$-\frac{5\sqrt{d}\sqrt{x}\cos\left(fx\right)\Gamma\left(\frac{5}{4}\right)}{4f\Gamma\left(\frac{9}{4}\right)}+\frac{5\sqrt{2}\sqrt{\pi}\sqrt{d}\,C\left(\frac{\sqrt{2}\sqrt{f}\sqrt{x}}{\sqrt{\pi}}\right)\Gamma\left(\frac{5}{4}\right)}{8f^{\frac{3}{2}}\Gamma\left(\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x)**(1/2)*sin(f*x),x)
```

```
[Out] -5*sqrt(d)*sqrt(x)*cos(f*x)*gamma(5/4)/(4*f*gamma(9/4)) + 5*sqrt(2)*sqrt(pi
)*sqrt(d)*fresnelc(sqrt(2)*sqrt(f)*sqrt(x)/sqrt(pi))*gamma(5/4)/(8*f**(3/2)
*gamma(9/4))
```

3.62 $\int \frac{\sin(fx)}{\sqrt{dx}}\,dx$

Optimal. Leaf size=46

$$\frac{\sqrt{2\pi}\,S\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{\sqrt{d}\sqrt{f}}$$

```
[Out] FresnelS(f^(1/2)*2^(1/2)/Pi^(1/2)*(d*x)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/d^(
1/2)/f^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3305, 3351}

$$\frac{\sqrt{2\pi}\,S\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{\sqrt{d}\sqrt{f}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[f*x]/Sqrt[d*x],x]
```

```
[Out] (Sqrt[2*Pi]*FresnelS[(Sqrt[f]*Sqrt[2/Pi]*Sqrt[d*x])/Sqrt[d]])/(Sqrt[d]*Sqrt
[f])
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin(fx)}{\sqrt{dx}}\,dx = \frac{2\,\text{Subst}\left(\int \sin\left(\frac{fx^2}{d}\right)dx, x, \sqrt{dx}\right)}{d} = \frac{\sqrt{2\pi}\,S\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{\sqrt{d}\sqrt{f}}$$

Mathematica [C] time = 0.01, size = 59, normalized size = 1.28

$$\frac{-\sqrt{-ifx}\,\Gamma\left(\frac{1}{2},-ifx\right)-\sqrt{ifx}\,\Gamma\left(\frac{1}{2},ifx\right)}{2f\sqrt{dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[f*x]/Sqrt[d*x],x]
[Out] (-(Sqrt[(-I)*f*x]*Gamma[1/2, (-I)*f*x]) - Sqrt[I*f*x]*Gamma[1/2, I*f*x])/(2
*f*Sqrt[d*x])
```

fricas [A] time = 0.69, size = 38, normalized size = 0.83

$$\frac{\sqrt{2}\,\pi\sqrt{\frac{f}{\pi d}}\,\mathrm{S}\left(\sqrt{2}\sqrt{dx}\sqrt{\frac{f}{\pi d}}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)^(1/2),x, algorithm="fricas")
[Out] sqrt(2)*pi*sqrt(f/(pi*d))*fresnel_sin(sqrt(2)*sqrt(d*x)*sqrt(f/(pi*d)))/f
```

giac [C] time = 0.37, size = 136, normalized size = 2.96

$$-\frac{\frac{i\sqrt{2}\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{df}\sqrt{dx}\left(\frac{idf}{\sqrt{d^2f^2}}+1\right)}{2d}\right)}{\sqrt{df}\left(\frac{idf}{\sqrt{d^2f^2}}+1\right)}-\frac{i\sqrt{2}\sqrt{\pi}\,d\,\mathrm{erf}\left(-\frac{\sqrt{2}\sqrt{df}\sqrt{dx}\left(-\frac{idf}{\sqrt{d^2f^2}}+1\right)}{2d}\right)}{\sqrt{df}\left(-\frac{idf}{\sqrt{d^2f^2}}+1\right)}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*(I*sqrt(2)*sqrt(pi)*d*erf(-1/2*sqrt(2)*sqrt(d*f)*sqrt(d*x)*(I*d*f/sqrt
(d^2*f^2) + 1)/d)/(sqrt(d*f)*(I*d*f/sqrt(d^2*f^2) + 1)) - I*sqrt(2)*sqrt(pi
)*d*erf(-1/2*sqrt(2)*sqrt(d*f)*sqrt(d*x)*(-I*d*f/sqrt(d^2*f^2) + 1)/d)/(sqr
t(d*f)*(-I*d*f/sqrt(d^2*f^2) + 1)))/d
```

maple [A] time = 0.01, size = 42, normalized size = 0.91

$$\frac{\sqrt{2}\,\sqrt{\pi}\,\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx}\,f}{\sqrt{\pi}\,\sqrt{\frac{f}{d}}\,d}\right)}{d\sqrt{\frac{f}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x)/(d*x)^(1/2),x)
```

```
[Out] 1/d*2^(1/2)*Pi^(1/2)/(1/d*f)^(1/2)*FresnelS(2^(1/2)/Pi^(1/2)/(1/d*f)^(1/2)*
(d*x)^(1/2)/d*f)
```

maxima [C] time = 0.65, size = 67, normalized size = 1.46

$$\frac{\sqrt{2}\left((i+1)\,\sqrt{\pi}\,\left(\frac{f^2}{d^2}\right)^{\frac{1}{4}}\operatorname{erf}\left(\sqrt{dx}\,\sqrt{\frac{i f}{d}}\right)-(i-1)\,\sqrt{\pi}\,\left(\frac{f^2}{d^2}\right)^{\frac{1}{4}}\operatorname{erf}\left(\sqrt{dx}\,\sqrt{-\frac{i f}{d}}\right)\right)}{4\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(2)*((I + 1)*sqrt(pi)*(f^2/d^2)^(1/4)*erf(sqrt(d*x)*sqrt(I*f/d)) -
(I - 1)*sqrt(pi)*(f^2/d^2)^(1/4)*erf(sqrt(d*x)*sqrt(-I*f/d)))/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sin\left(f\,x\right)}{\sqrt{d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x)/(d*x)^(1/2),x)
```

```
[Out] int(sin(f*x)/(d*x)^(1/2), x)
```

sympy [A] time = 1.16, size = 54, normalized size = 1.17

$$\frac{3\sqrt{2}\,\sqrt{\pi}\,S\left(\frac{\sqrt{2}\,\sqrt{f}\,\sqrt{x}}{\sqrt{\pi}}\right)\Gamma\left(\frac{3}{4}\right)}{4\sqrt{d}\,\sqrt{f}\,\Gamma\left(\frac{7}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)**(1/2),x)
```

```
[Out] 3*sqrt(2)*sqrt(pi)*fresnels(sqrt(2)*sqrt(f)*sqrt(x)/sqrt(pi))*gamma(3/4)/(4
*sqrt(d)*sqrt(f)*gamma(7/4))
```

3.63 $\int \frac{\sin(fx)}{(dx)^{3/2}}\,dx$

Optimal. Leaf size=64

$$\frac{2\sqrt{2\pi}\,\sqrt{f}\,C\left(\frac{\sqrt{f}\,\sqrt{\frac{2}{\pi}}\,\sqrt{dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sin(fx)}{d\sqrt{dx}}$$

```
[Out] 2*FresnelC(f^(1/2)*2^(1/2)/Pi^(1/2)*(d*x)^(1/2)/d^(1/2))*f^(1/2)*2^(1/2)*Pi
^(1/2)/d^(3/2)-2*sin(f*x)/d/(d*x)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3297, 3304, 3352}

$$\frac{2\sqrt{2\pi}\,\sqrt{f}\,\text{FresnelC}\left(\frac{\sqrt{\frac{2}{\pi}}\,\sqrt{f}\,\sqrt{dx}}{\sqrt{d}}\right)}{d^{3/2}}-\frac{2\sin(fx)}{d\sqrt{dx}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[f*x]/(d*x)^(3/2),x]
```

```
[Out] (2*Sqrt[f]*Sqrt[2*Pi]*FresnelC[(Sqrt[f]*Sqrt[2/Pi]*Sqrt[d*x])/Sqrt[d]])/d^(
3/2) - (2*Sin[f*x])/(d*Sqrt[d*x])
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3304

```
Int[sin[Pi/2 + (e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> D
ist[2/d, Subst[Int[Cos[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d
, e, f}, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3352

```
Int[Cos[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lC[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin(fx)}{(dx)^{3/2}}\,dx = -\frac{2\sin(fx)}{d\sqrt{dx}} + \frac{(2f)\int \frac{\cos(fx)}{\sqrt{dx}}\,dx}{d}$$
$$= -\frac{2\sin(fx)}{d\sqrt{dx}} + \frac{(4f)\,\mathrm{Subst}\left(\int \cos\left(\frac{fx^2}{d}\right)dx, x, \sqrt{dx}\right)}{d^2}$$
$$= \frac{2\sqrt{f}\,\sqrt{2\pi}\,C\left(\frac{\sqrt{f}\,\sqrt{\frac{2}{\pi}}\,\sqrt{dx}}{\sqrt{d}}\right)}{d^{3/2}} - \frac{2\sin(fx)}{d\sqrt{dx}}$$

Mathematica [C] time = 0.02, size = 64, normalized size = 1.00

$$\frac{x\left(-2\sin(fx) - i\sqrt{-ifx}\,\Gamma\left(\frac{1}{2}, -ifx\right) + i\sqrt{ifx}\,\Gamma\left(\frac{1}{2}, ifx\right)\right)}{(dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[f*x]/(d*x)^(3/2),x]
```

```
[Out] (x*((-I)*Sqrt[(-I)*f*x]*Gamma[1/2, (-I)*f*x] + I*Sqrt[I*f*x]*Gamma[1/2, I*f
*x] - 2*Sin[f*x]))/(d*x)^(3/2)
```

fricas [A] time = 0.65, size = 57, normalized size = 0.89

$$\frac{2\left(\sqrt{2}\,\pi dx\sqrt{\frac{f}{\pi d}}\,C\left(\sqrt{2}\,\sqrt{dx}\,\sqrt{\frac{f}{\pi d}}\right) - \sqrt{dx}\,\sin\left(fx\right)\right)}{d^2 x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*(sqrt(2)*pi*d*x*sqrt(f/(pi*d))*fresnel_cos(sqrt(2)*sqrt(d*x)*sqrt(f/(pi*d
))) - sqrt(d*x)*sin(f*x))/(d^2*x)
```

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

$$\int \frac{\sin\left(fx\right)}{(dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sin(f*x)/(d*x)^(3/2), x)
```

maple [A] time = 0.01, size = 60, normalized size = 0.94

$$\frac{-\frac{2\sin\left(fx\right)}{\sqrt{dx}}+\frac{2f\sqrt{2}\,\sqrt{\pi}\,\,\mathrm{FresnelC}\left(\frac{\sqrt{2}\,\sqrt{dx}\,f}{\sqrt{\pi}\,\sqrt{\frac{f}{d}}\,d}\right)}{d\sqrt{\frac{f}{d}}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x)/(d*x)^(3/2),x)
```

```
[Out] 2/d*(-sin(f*x)/(d*x)^(1/2)+1/d*f*2^(1/2)*Pi^(1/2)/(1/d*f)^(1/2)*FresnelC(2^
(1/2)/Pi^(1/2)/(1/d*f)^(1/2)*(d*x)^(1/2)/d*f))
```

maxima [C] time = 2.39, size = 38, normalized size = 0.59

$$-\frac{\sqrt{fx}\left(\left(i-1\right)\,\sqrt{2}\,\Gamma\left(-\frac{1}{2},i\,fx\right)-\left(i+1\right)\,\sqrt{2}\,\Gamma\left(-\frac{1}{2},-i\,fx\right)\right)}{4\,\sqrt{dx}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/4*sqrt(f*x)*((I - 1)*sqrt(2)*gamma(-1/2, I*f*x) - (I + 1)*sqrt(2)*gamma(
-1/2, -I*f*x))/(sqrt(d*x)*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sin\left(f\,x\right)}{{\left(d\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x)/(d*x)^(3/2),x)
```

```
[Out] int(sin(f*x)/(d*x)^(3/2), x)
```

sympy [A] time = 3.42, size = 80, normalized size = 1.25

$$\frac{\sqrt{2}\sqrt{\pi}\sqrt{f}\,C\left(\frac{\sqrt{2}\sqrt{f}\sqrt{x}}{\sqrt{\pi}}\right)\Gamma\left(\frac{1}{4}\right)}{2d^{\frac{3}{2}}\Gamma\left(\frac{5}{4}\right)}-\frac{\sin\left(fx\right)\Gamma\left(\frac{1}{4}\right)}{2d^{\frac{3}{2}}\sqrt{x}\,\Gamma\left(\frac{5}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)**(3/2),x)
```

```
[Out] sqrt(2)*sqrt(pi)*sqrt(f)*fresnelc(sqrt(2)*sqrt(f)*sqrt(x)/sqrt(pi))*gamma(1
/4)/(2*d**(3/2)*gamma(5/4)) - sin(f*x)*gamma(1/4)/(2*d**(3/2)*sqrt(x)*gamma
(5/4))
```

3.64 $\int \frac{\sin(fx)}{(dx)^{5/2}}\,dx$

Optimal. Leaf size=87

$$-\frac{4\sqrt{2\pi}\,f^{3/2}S\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{4f\cos(fx)}{3d^2\sqrt{dx}}-\frac{2\sin(fx)}{3d(dx)^{3/2}}$$

```
[Out] -2/3*sin(f*x)/d/(d*x)^(3/2)-4/3*f^(3/2)*FresnelS(f^(1/2)*2^(1/2)/Pi^(1/2)*(
d*x)^(1/2)/d^(1/2))*2^(1/2)*Pi^(1/2)/d^(5/2)-4/3*f*cos(f*x)/d^2/(d*x)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3297, 3305, 3351}

$$-\frac{4\sqrt{2\pi}\,f^{3/2}S\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{3d^{5/2}}-\frac{4f\cos(fx)}{3d^2\sqrt{dx}}-\frac{2\sin(fx)}{3d(dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[f*x]/(d*x)^(5/2),x]
```

```
[Out] (-4*f*Cos[f*x])/(3*d^2*Sqrt[d*x]) - (4*f^(3/2)*Sqrt[2*Pi]*FresnelS[(Sqrt[f]
*Sqrt[2/Pi]*Sqrt[d*x])/Sqrt[d]])/(3*d^(5/2)) - (2*Sin[f*x])/(3*d*(d*x)^(3/2
))
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3305

```
Int[sin[(e_.) + (f_.)*(x_)]/Sqrt[(c_.) + (d_.)*(x_)], x_Symbol] :> Dist[2/d
, Subst[Int[Sin[(f*x^2)/d], x], x, Sqrt[c + d*x]], x] /; FreeQ[{c, d, e, f}
, x] && ComplexFreeQ[f] && EqQ[d*e - c*f, 0]
```

Rule 3351

```
Int[Sin[(d_.)*((e_.) + (f_.)*(x_))^2], x_Symbol] :> Simp[(Sqrt[Pi/2]*Fresne
lS[Sqrt[2/Pi]*Rt[d, 2]*(e + f*x)])/(f*Rt[d, 2]), x] /; FreeQ[{d, e, f}, x]
```

Rubi steps

$$\int \frac{\sin(fx)}{(dx)^{5/2}}\,dx = -\frac{2\sin(fx)}{3d(dx)^{3/2}} + \frac{(2f)\int \frac{\cos(fx)}{(dx)^{3/2}}\,dx}{3d}$$

$$= -\frac{4f\cos(fx)}{3d^2\sqrt{dx}} - \frac{2\sin(fx)}{3d(dx)^{3/2}} - \frac{\left(4f^2\right)\int \frac{\sin(fx)}{\sqrt{dx}}\,dx}{3d^2}$$

$$= -\frac{4f\cos(fx)}{3d^2\sqrt{dx}} - \frac{2\sin(fx)}{3d(dx)^{3/2}} - \frac{\left(8f^2\right)\text{Subst}\left(\int \sin\left(\frac{fx^2}{d}\right)\,dx, x, \sqrt{dx}\right)}{3d^3}$$

$$= -\frac{4f\cos(fx)}{3d^2\sqrt{dx}} - \frac{4f^{3/2}\sqrt{2\pi}\,S\left(\frac{\sqrt{f}\sqrt{\frac{2}{\pi}}\sqrt{dx}}{\sqrt{d}}\right)}{3d^{5/2}} - \frac{2\sin(fx)}{3d(dx)^{3/2}}$$

Mathematica [C] time = 0.09, size = 111, normalized size = 1.28

$$-\frac{2x\sin(fx)}{3(dx)^{5/2}} + \frac{2fx^{5/2}\left(\frac{\sqrt{ifx}\,\Gamma\left(\frac{1}{2},ifx\right)-e^{-ifx}}{\sqrt{x}} - \frac{e^{ifx}-\sqrt{-ifx}\,\Gamma\left(\frac{1}{2},-ifx\right)}{\sqrt{x}}\right)}{3(dx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[f*x]/(d*x)^(5/2),x]
```

```
[Out] (2*f*x^(5/2)*(-((E^(I*f*x) - Sqrt[(-I)*f*x]*Gamma[1/2, (-I)*f*x])/Sqrt[x])
+ (-E^((-I)*f*x) + Sqrt[I*f*x]*Gamma[1/2, I*f*x])/Sqrt[x]))/(3*(d*x)^(5/2))
 - (2*x*Sin[f*x])/(3*(d*x)^(5/2))
```

fricas [A] time = 0.60, size = 69, normalized size = 0.79

$$-\frac{2\left(2\sqrt{2}\,\pi d f x^2\sqrt{\frac{f}{\pi d}}\;\mathrm{S}\left(\sqrt{2}\sqrt{dx}\sqrt{\frac{f}{\pi d}}\right) + \left(2\,fx\cos\left(fx\right) + \sin\left(fx\right)\right)\sqrt{dx}\right)}{3\,d^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(2*sqrt(2)*pi*d*f*x^2*sqrt(f/(pi*d))*fresnel_sin(sqrt(2)*sqrt(d*x)*sqr
t(f/(pi*d))) + (2*f*x*cos(f*x) + sin(f*x))*sqrt(d*x))/(d^3*x^2)
```

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

$$\int \frac{\sin\left(fx\right)}{\left(dx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sin(f*x)/(d*x)^(5/2), x)
```

maple [A] time = 0.01, size = 79, normalized size = 0.91

$$\frac{-\frac{2\sin\left(fx\right)}{3\left(dx\right)^{\frac{3}{2}}}+\frac{4f\left(-\frac{\cos\left(fx\right)}{\sqrt{dx}}-\frac{f\sqrt{2}\,\sqrt{\pi}\,\mathrm{S}\left(\frac{\sqrt{2}\,\sqrt{dx}\,f}{\sqrt{\pi}\,\sqrt{\frac{f}{d}}\,d}\right)}{d\sqrt{\frac{f}{d}}}\right)}{3d}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x)/(d*x)^(5/2),x)
```

```
[Out] 2/d*(-1/3*sin(f*x)/(d*x)^(3/2)+2/3/d*f*(-1/(d*x)^(1/2)*cos(f*x)-1/d*f*2^(1/
2)*Pi^(1/2)/(1/d*f)^(1/2)*FresnelS(2^(1/2)/Pi^(1/2)/(1/d*f)^(1/2)*(d*x)^(1/
2)/d*f)))
```

maxima [C] time = 1.07, size = 38, normalized size = 0.44

$$-\frac{\left(fx\right)^{\frac{3}{2}}\left(-\left(i+1\right)\,\sqrt{2}\Gamma\left(-\frac{3}{2},i\,fx\right)+\left(i-1\right)\,\sqrt{2}\Gamma\left(-\frac{3}{2},-i\,fx\right)\right)}{4\,\left(dx\right)^{\frac{3}{2}}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/4*(f*x)^(3/2)*(-(I + 1)*sqrt(2)*gamma(-3/2, I*f*x) + (I - 1)*sqrt(2)*gam
ma(-3/2, -I*f*x))/((d*x)^(3/2)*d)
```

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

$$\int \frac{\sin\left(f\,x\right)}{{\left(d\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(f*x)/(d*x)^(5/2),x)
```

```
[Out] int(sin(f*x)/(d*x)^(5/2), x)
```

sympy [A] time = 24.50, size = 114, normalized size = 1.31

$$\frac{\sqrt{2}\sqrt{\pi}f^{\frac{3}{2}}S\left(\frac{\sqrt{2}\sqrt{f}\sqrt{x}}{\sqrt{\pi}}\right)\Gamma\left(-\frac{1}{4}\right)}{3d^{\frac{5}{2}}\Gamma\left(\frac{3}{4}\right)}+\frac{f\cos\left(fx\right)\Gamma\left(-\frac{1}{4}\right)}{3d^{\frac{5}{2}}\sqrt{x}\Gamma\left(\frac{3}{4}\right)}+\frac{\sin\left(fx\right)\Gamma\left(-\frac{1}{4}\right)}{6d^{\frac{5}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(f*x)/(d*x)**(5/2),x)
```

```
[Out] sqrt(2)*sqrt(pi)*f**(3/2)*fresnels(sqrt(2)*sqrt(f)*sqrt(x)/sqrt(pi))*gamma(
-1/4)/(3*d**(5/2)*gamma(3/4)) + f*cos(f*x)*gamma(-1/4)/(3*d**(5/2)*sqrt(x)*
gamma(3/4)) + sin(f*x)*gamma(-1/4)/(6*d**(5/2)*x**(3/2)*gamma(3/4))
```

3.65 $\int \sqrt{c+dx}\,\csc(a+bx)\,dx$

Optimal. Leaf size=19

$$\text{Int}\left(\sqrt{c+dx}\,\csc(a+bx),x\right)$$

```
[Out] Unintegrable(csc(b*x+a)*(d*x+c)^(1/2),x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \sqrt{c+dx}\,\csc(a+bx)\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[c + d*x]*Csc[a + b*x],x]
[Out] Defer[Int][Sqrt[c + d*x]*Csc[a + b*x], x]
```

Rubi steps

$$\int \sqrt{c+dx}\,\csc(a+bx)\,dx=\int \sqrt{c+dx}\,\csc(a+bx)\,dx$$

Mathematica [A] time = 15.91, size = 0, normalized size = 0.00

$$\int \sqrt{c+dx}\,\csc(a+bx)\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[c + d*x]*Csc[a + b*x],x]
[Out] Integrate[Sqrt[c + d*x]*Csc[a + b*x], x]
```

fricas [A] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{dx+c}\,\csc\left(bx+a\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*x+c)^(1/2),x, algorithm="fricas")
[Out] integral(sqrt(d*x + c)*csc(b*x + a), x)
```

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

$$\int \sqrt{dx+c}\,\csc\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*x+c)^(1/2),x, algorithm="giac")
[Out] integrate(sqrt(d*x + c)*csc(b*x + a), x)
```

maple [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \csc\left(bx+a\right)\sqrt{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)*(d*x+c)^(1/2),x)
[Out] int(csc(b*x+a)*(d*x+c)^(1/2),x)
```

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

$$\int \sqrt{dx+c}\,\csc\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*x+c)^(1/2),x, algorithm="maxima")
[Out] integrate(sqrt(d*x + c)*csc(b*x + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{\sqrt{c+d\,x}}{\sin\left(a+b\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^(1/2)/sin(a + b*x),x)
[Out] int((c + d*x)^(1/2)/sin(a + b*x), x)
```

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

$$\int \sqrt{c+dx}\,\csc\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)*(d*x+c)**(1/2),x)
[Out] Integral(sqrt(c + d*x)*csc(a + b*x), x)
```

3.66 $\int \frac{\csc(a+bx)}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=19

$$\text{Int}\left(\frac{\csc(a+bx)}{\sqrt{c+dx}},x\right)$$

```
[Out] Unintegrable(csc(b*x+a)/(d*x+c)^(1/2),x)
```

Rubi [A] time = 0.03, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc(a+bx)}{\sqrt{c+dx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[a + b*x]/Sqrt[c + d*x],x]
[Out] Defer[Int][Csc[a + b*x]/Sqrt[c + d*x], x]
```

Rubi steps

$$\int \frac{\csc(a+bx)}{\sqrt{c+dx}}\,dx = \int \frac{\csc(a+bx)}{\sqrt{c+dx}}\,dx$$

Mathematica [A] time = 15.27, size = 0, normalized size = 0.00

$$\int \frac{\csc(a+bx)}{\sqrt{c+dx}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[a + b*x]/Sqrt[c + d*x],x]
[Out] Integrate[Csc[a + b*x]/Sqrt[c + d*x], x]
```

fricas [A] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\csc\left(bx+a\right)}{\sqrt{dx+c}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(csc(b*x + a)/sqrt(d*x + c), x)
```

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

$$\int \frac{\csc(bx+a)}{\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(csc(b*x + a)/sqrt(d*x + c), x)
```

maple [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{\csc(bx+a)}{\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(b*x+a)/(d*x+c)^(1/2),x)
```

```
[Out] int(csc(b*x+a)/(d*x+c)^(1/2),x)
```

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

$$\int \frac{\csc(bx+a)}{\sqrt{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(csc(b*x + a)/sqrt(d*x + c), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{\sin(a+b\,x)\,\sqrt{c+d\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(a + b*x)*(c + d*x)^(1/2)),x)
```

```
[Out] int(1/(sin(a + b*x)*(c + d*x)^(1/2)), x)
```

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

$$\int \frac{\csc(a+bx)}{\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(b*x+a)/(d*x+c)**(1/2),x)
```

```
[Out] Integral(csc(a + b*x)/sqrt(c + d*x), x)
```

3.67 $\int \left(\frac{x}{\sin^{\frac{3}{2}}(e+fx)} + x\sqrt{\sin(e+fx)}\right) dx$

Optimal. Leaf size=38

$$\frac{4\sqrt{\sin(e+fx)}}{f^2} - \frac{2x\cos(e+fx)}{f\sqrt{\sin(e+fx)}}$$

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

Rubi [A] time = 0.06, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {3315}

$$\frac{4\sqrt{\sin(e+fx)}}{f^2} - \frac{2x\cos(e+fx)}{f\sqrt{\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[x/Sin[e + f*x]^(3/2) + x*Sqrt[Sin[e + f*x]],x]
```

```
[Out] (-2*x*Cos[e + f*x])/(f*Sqrt[Sin[e + f*x]]) + (4*Sqrt[Sin[e + f*x]])/f^2
```

Rule 3315

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[((c + d*x)*Cos[e + f*x]*(b*Sin[e + f*x])^(n + 1))/(b*f*(n + 1)), x] +
 (Dist[(n + 2)/(b^2*(n + 1)), Int[(c + d*x)*(b*Sin[e + f*x])^(n + 2), x], x
] - Simp[(d*(b*Sin[e + f*x])^(n + 2))/(b^2*f^2*(n + 1)*(n + 2)), x]) /; Fre
eQ[{b, c, d, e, f}, x] && LtQ[n, -1] && NeQ[n, -2]
```

Rubi steps

$$\begin{aligned} \int \left(\frac{x}{\sin^{\frac{3}{2}}(e+fx)} + x\sqrt{\sin(e+fx)}\right) dx &= \int \frac{x}{\sin^{\frac{3}{2}}(e+fx)}\, dx + \int x\sqrt{\sin(e+fx)}\, dx \\ &= -\frac{2x\cos(e+fx)}{f\sqrt{\sin(e+fx)}} + \frac{4\sqrt{\sin(e+fx)}}{f^2} \end{aligned}$$

Mathematica [A] time = 0.47, size = 33, normalized size = 0.87

$$\frac{4\sin(e+fx) - 2fx\cos(e+fx)}{f^2\sqrt{\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Sin[e + f*x]^(3/2) + x*Sqrt[Sin[e + f*x]],x]
```

```
[Out] (-2*f*x*Cos[e + f*x] + 4*Sin[e + f*x])/(f^2*Sqrt[Sin[e + f*x]])
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)^(3/2)+x*sin(f*x+e)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int x\sqrt{\sin\left(fx+e\right)} + \frac{x}{\sin\left(fx+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)^(3/2)+x*sin(f*x+e)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(x*sqrt(sin(f*x + e)) + x/sin(f*x + e)^(3/2), x)
```

maple [F] time = 0.24, size = 0, normalized size = 0.00

$$\int \frac{x}{\sin\left(fx+e\right)^{\frac{3}{2}}} + x\left(\sqrt{\sin}\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/sin(f*x+e)^(3/2)+x*sin(f*x+e)^(1/2),x)
```

```
[Out] int(x/sin(f*x+e)^(3/2)+x*sin(f*x+e)^(1/2),x)
```

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

$$\int x\sqrt{\sin\left(fx+e\right)} + \frac{x}{\sin\left(fx+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)^(3/2)+x*sin(f*x+e)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(x*sqrt(sin(f*x + e)) + x/sin(f*x + e)^(3/2), x)
```

mupad [B] time = 1.05, size = 36, normalized size = 0.95

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*sin(e + f*x)^(1/2) + x/sin(e + f*x)^(3/2),x)
```

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

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

$$\int\frac{x\left(\sin^2\left(e+fx\right)+1\right)}{\sin^{\frac{3}{2}}\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)**(3/2)+x*sin(f*x+e)**(1/2),x)
```

```
[Out] Integral(x*(sin(e + f*x)**2 + 1)/sin(e + f*x)**(3/2), x)
```

3.68 $\int \left(\frac{x^2}{\sin^{\frac{3}{2}}(e+fx)}+x^2\sqrt{\sin(e+fx)}\right)dx$

Optimal. Leaf size=62

$$-\frac{16E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)}{f^3}+\frac{8x\sqrt{\sin(e+fx)}}{f^2}-\frac{2x^2\cos(e+fx)}{f\sqrt{\sin(e+fx)}}$$

```
[Out] 16*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1/2*e+1/4*Pi+1/2*f*x)*EllipticE(
cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))/f^3-2*x^2*cos(f*x+e)/f/sin(f*x+e)^(1/2)+
8*x*sin(f*x+e)^(1/2)/f^2
```

Rubi [A] time = 0.11, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {3316, 2639}

$$\frac{8x\sqrt{\sin(e+fx)}}{f^2}-\frac{16E\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)}{f^3}-\frac{2x^2\cos(e+fx)}{f\sqrt{\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/Sin[e + f*x]^(3/2) + x^2*Sqrt[Sin[e + f*x]],x]
```

```
[Out] (-16*EllipticE[(e - Pi/2 + f*x)/2, 2])/f^3 - (2*x^2*Cos[e + f*x])/(f*Sqrt[S
in[e + f*x]]) + (8*x*Sqrt[Sin[e + f*x]])/f^2
```

Rule 2639

```
Int[Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticE[(1*(c - P
i/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 3316

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[((c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n + 1))/(b*f*(n + 1
)), x] + (Dist[(n + 2)/(b^2*(n + 1)), Int[(c + d*x)^m*(b*Sin[e + f*x])^(n +
 2), x], x] + Dist[(d^2*m*(m - 1))/(b^2*f^2*(n + 1)*(n + 2)), Int[(c + d*x)
^(m - 2)*(b*Sin[e + f*x])^(n + 2), x], x] - Simp[(d*m*(c + d*x)^(m - 1)*(b*
Sin[e + f*x])^(n + 2))/(b^2*f^2*(n + 1)*(n + 2)), x]) /; FreeQ[{b, c, d, e,
 f}, x] && LtQ[n, -1] && NeQ[n, -2] && GtQ[m, 1]
```

Rubi steps

$$\int \left(\frac{x^2}{\sin^{\frac{3}{2}}(e+fx)} + x^2\sqrt{\sin(e+fx)}\right) dx = \int \frac{x^2}{\sin^{\frac{3}{2}}(e+fx)}\, dx + \int x^2\sqrt{\sin(e+fx)}\, dx$$
$$= -\frac{2x^2\cos(e+fx)}{f\sqrt{\sin(e+fx)}} + \frac{8x\sqrt{\sin(e+fx)}}{f^2} - \frac{8\int\sqrt{\sin(e+fx)}\, dx}{f^2}$$
$$= -\frac{16E\left(\frac{1}{2}\left(e-\frac{\pi}{2}+fx\right)\middle|2\right)}{f^3} - \frac{2x^2\cos(e+fx)}{f\sqrt{\sin(e+fx)}} + \frac{8x\sqrt{\sin(e+fx)}}{f^2}$$

Mathematica [C] time = 4.69, size = 185, normalized size = 2.98

$$-\frac{\sec(e)\left(\left(f^2x^2-8\right)\cos(2e+fx) - 8fx\cos(e)\sin(e+fx) + \left(f^2x^2+8\right)\cos(fx)\right)}{f^3\sqrt{\sin(e+fx)}} + \frac{8\sec(e)e^{-ifx}\sqrt{2-2e^{2i(e+fx)}}\left(3\right.}{3f^3\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/Sin[e + f*x]^(3/2) + x^2*Sqrt[Sin[e + f*x]],x]
```

```
[Out] (8*Sqrt[2 - 2*E^((2*I)*(e + f*x))]*(3*Hypergeometric2F1[-1/4, 1/2, 3/4, E^(
(2*I)*(e + f*x))] + E^((2*I)*f*x)*Hypergeometric2F1[1/2, 3/4, 7/4, E^((2*I)
*(e + f*x))])*Sec[e])/(3*E^(I*f*x)*Sqrt[((-I)*(-1 + E^((2*I)*(e + f*x))))/E
^(I*(e + f*x))]*f^3) - (Sec[e]*((8 + f^2*x^2)*Cos[f*x] + (-8 + f^2*x^2)*Cos
[2*e + f*x] - 8*f*x*Cos[e]*Sin[e + f*x]))/(f^3*Sqrt[Sin[e + f*x]])
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/sin(f*x+e)^(3/2)+x^2*sin(f*x+e)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int x^2\sqrt{\sin\left(fx+e\right)} + \frac{x^2}{\sin\left(fx+e\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/sin(f*x+e)^(3/2)+x^2*sin(f*x+e)^(1/2),x, algorithm="giac")
[Out] integrate(x^2*sqrt(sin(f*x + e)) + x^2/sin(f*x + e)^(3/2), x)
```

maple [F] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sin\left(fx+e\right)^{\frac{3}{2}}}+x^2\left(\sqrt{\sin}\,\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/sin(f*x+e)^(3/2)+x^2*sin(f*x+e)^(1/2),x)
[Out] int(x^2/sin(f*x+e)^(3/2)+x^2*sin(f*x+e)^(1/2),x)
```

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

$$\int x^2\sqrt{\sin\left(fx+e\right)}+\frac{x^2}{\sin\left(fx+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/sin(f*x+e)^(3/2)+x^2*sin(f*x+e)^(1/2),x, algorithm="maxima")
[Out] integrate(x^2*sqrt(sin(f*x + e)) + x^2/sin(f*x + e)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int x^2\,\sqrt{\sin\left(e+f\,x\right)}+\frac{x^2}{{\sin\left(e+f\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*sin(e + f*x)^(1/2) + x^2/sin(e + f*x)^(3/2),x)
[Out] int(x^2*sin(e + f*x)^(1/2) + x^2/sin(e + f*x)^(3/2), x)
```

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

$$\int \frac{x^2\left(\sin^2\left(e+fx\right)+1\right)}{\sin^{\frac{3}{2}}\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/sin(f*x+e)**(3/2)+x**2*sin(f*x+e)**(1/2),x)
[Out] Integral(x**2*(sin(e + f*x)**2 + 1)/sin(e + f*x)**(3/2), x)
```

3.69 $\int \left(\frac{x}{\sin^{\frac{5}{2}}(e+fx)} - \frac{x}{3\sqrt{\sin(e+fx)}} \right) dx$

Optimal. Leaf size=42

$$-\frac{4}{3f^2\sqrt{\sin(e+fx)}} - \frac{2x\cos(e+fx)}{3f\sin^{\frac{3}{2}}(e+fx)}$$

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

Rubi [A] time = 0.06, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {3315}

$$-\frac{4}{3f^2\sqrt{\sin(e+fx)}} - \frac{2x\cos(e+fx)}{3f\sin^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Int[x/Sin[e + f*x]^(5/2) - x/(3*Sqrt[Sin[e + f*x]]),x]
```

```
[Out] (-2*x*Cos[e + f*x])/(3*f*Sin[e + f*x]^(3/2)) - 4/(3*f^2*Sqrt[Sin[e + f*x]])
```

Rule 3315

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[((c + d*x)*Cos[e + f*x]*(b*Sin[e + f*x])^(n + 1))/(b*f*(n + 1)), x] +
 (Dist[(n + 2)/(b^2*(n + 1)), Int[(c + d*x)*(b*Sin[e + f*x])^(n + 2), x], x
] - Simp[(d*(b*Sin[e + f*x])^(n + 2))/(b^2*f^2*(n + 1)*(n + 2)), x]) /; Fre
eQ[{b, c, d, e, f}, x] && LtQ[n, -1] && NeQ[n, -2]
```

Rubi steps

$$\begin{aligned}\int \left(\frac{x}{\sin^{\frac{5}{2}}(e+fx)} - \frac{x}{3\sqrt{\sin(e+fx)}} \right) dx &= -\left(\frac{1}{3} \int \frac{x}{\sqrt{\sin(e+fx)}}\, dx \right) + \int \frac{x}{\sin^{\frac{5}{2}}(e+fx)}\, dx \\ &= -\frac{2x\cos(e+fx)}{3f\sin^{\frac{3}{2}}(e+fx)} - \frac{4}{3f^2\sqrt{\sin(e+fx)}}\end{aligned}$$

Mathematica [A] time = 0.46, size = 35, normalized size = 0.83

$$-\frac{2(2\sin(e+fx)+fx\cos(e+fx))}{3f^2\sin^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Sin[e + f*x]^(5/2) - x/(3*Sqrt[Sin[e + f*x]]),x]
[Out] (-2*(f*x*Cos[e + f*x] + 2*Sin[e + f*x]))/(3*f^2*Sin[e + f*x]^(3/2))
```

fricas [A] time = 0.64, size = 48, normalized size = 1.14

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)^(5/2)-1/3*x/sin(f*x+e)^(1/2),x, algorithm="fricas")
[Out] 2/3*(f*x*cos(f*x + e) + 2*sin(f*x + e))*sqrt(sin(f*x + e))/(f^2*cos(f*x + e
)^2 - f^2)
```

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

$$\int -\frac{x}{3\sqrt{\sin\left(fx+e\right)}}+\frac{x}{\sin\left(fx+e\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)^(5/2)-1/3*x/sin(f*x+e)^(1/2),x, algorithm="giac")
[Out] integrate(-1/3*x/sqrt(sin(f*x + e)) + x/sin(f*x + e)^(5/2), x)
```

maple [F] time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{x}{\sin\left(fx+e\right)^{\frac{5}{2}}}-\frac{x}{3\sqrt{\sin\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/sin(f*x+e)^(5/2)-1/3*x/sin(f*x+e)^(1/2),x)
[Out] int(x/sin(f*x+e)^(5/2)-1/3*x/sin(f*x+e)^(1/2),x)
```

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

$$\int -\frac{x}{3\sqrt{\sin\left(fx+e\right)}}+\frac{x}{\sin\left(fx+e\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)^(5/2)-1/3*x/sin(f*x+e)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(-1/3*x/sqrt(sin(f*x + e)) + x/sin(f*x + e)^(5/2), x)
```

mupad [B] time = 3.11, size = 140, normalized size = 3.33

$$-\frac{4\sqrt{\sin\left(e+f\,x\right)}\,\left(20\,\sin\left(e+f\,x\right)-10\,\sin\left(3\,e+3\,f\,x\right)+2\,\sin\left(5\,e+5\,f\,x\right)-2\,f\,x\,\left(2\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2-1\right)+3\,f}{3\,f^2\,\left(30\sin\left(e+f\,x\right)^2-12\sin\left(2\,e+2\,f\,x\right)^2+2\sin\left(3\,e+3\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/sin(e + f*x)^(5/2) - x/(3*sin(e + f*x)^(1/2)),x)
```

```
[Out] -(4*sin(e + f*x)^(1/2)*(20*sin(e + f*x) - 10*sin(3*e + 3*f*x) + 2*sin(5*e +
 5*f*x) - 2*f*x*(2*sin(e/2 + (f*x)/2)^2 - 1) + 3*f*x*(2*sin((3*e)/2 + (3*f*
x)/2)^2 - 1) - f*x*(2*sin((5*e)/2 + (5*f*x)/2)^2 - 1)))/(3*f^2*(2*sin(3*e +
 3*f*x)^2 - 12*sin(2*e + 2*f*x)^2 + 30*sin(e + f*x)^2))
```

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

$$-\frac{\int\left(-\frac{3x}{\sin^{\frac{5}{2}}\left(e+fx\right)}\right)dx+\int\frac{x}{\sqrt{\sin\left(e+fx\right)}}\,dx}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)**(5/2)-1/3*x/sin(f*x+e)**(1/2),x)
```

```
[Out] -(Integral(-3*x/sin(e + f*x)**(5/2), x) + Integral(x/sqrt(sin(e + f*x)), x)
)/3
```

3.70 $\int \left(\frac{x}{\sin^{\frac{7}{2}}(e+fx)}+\frac{3}{5}x\sqrt{\sin(e+fx)}\right)dx$

Optimal. Leaf size=83

$$-\frac{4}{15f^2\sin^{\frac{3}{2}}(e+fx)}+\frac{12\sqrt{\sin(e+fx)}}{5f^2}-\frac{2x\cos(e+fx)}{5f\sin^{\frac{5}{2}}(e+fx)}-\frac{6x\cos(e+fx)}{5f\sqrt{\sin(e+fx)}}$$

```
[Out] -2/5*x*cos(f*x+e)/f/sin(f*x+e)^(5/2)-4/15/f^2/sin(f*x+e)^(3/2)-6/5*x*cos(f*
x+e)/f/sin(f*x+e)^(1/2)+12/5*sin(f*x+e)^(1/2)/f^2
```

Rubi [A] time = 0.09, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {3315}

$$-\frac{4}{15f^2\sin^{\frac{3}{2}}(e+fx)}+\frac{12\sqrt{\sin(e+fx)}}{5f^2}-\frac{2x\cos(e+fx)}{5f\sin^{\frac{5}{2}}(e+fx)}-\frac{6x\cos(e+fx)}{5f\sqrt{\sin(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[x/Sin[e + f*x]^(7/2) + (3*x*Sqrt[Sin[e + f*x]])/5,x]
```

```
[Out] (-2*x*Cos[e + f*x])/(5*f*Sin[e + f*x]^(5/2)) - 4/(15*f^2*Sin[e + f*x]^(3/2)
) - (6*x*Cos[e + f*x])/(5*f*Sqrt[Sin[e + f*x]]) + (12*Sqrt[Sin[e + f*x]])/(
5*f^2)
```

Rule 3315

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[((c + d*x)*Cos[e + f*x]*(b*Sin[e + f*x])^(n + 1))/(b*f*(n + 1)), x] +
 (Dist[(n + 2)/(b^2*(n + 1)), Int[(c + d*x)*(b*Sin[e + f*x])^(n + 2), x], x
] - Simp[(d*(b*Sin[e + f*x])^(n + 2))/(b^2*f^2*(n + 1)*(n + 2)), x]) /; Fre
eQ[{b, c, d, e, f}, x] && LtQ[n, -1] && NeQ[n, -2]
```

Rubi steps

$$\int \left(\frac{x}{\sin^{\frac{7}{2}}(e+fx)}+\frac{3}{5}x\sqrt{\sin(e+fx)}\right)dx=\frac{3}{5}\int x\sqrt{\sin(e+fx)}\,dx+\int \frac{x}{\sin^{\frac{7}{2}}(e+fx)}\,dx$$
$$=-\frac{2x\cos(e+fx)}{5f\sin^{\frac{5}{2}}(e+fx)}-\frac{4}{15f^2\sin^{\frac{3}{2}}(e+fx)}+\frac{3}{5}\int \frac{x}{\sin^{\frac{3}{2}}(e+fx)}\,dx+\frac{3}{5}\int$$
$$=-\frac{2x\cos(e+fx)}{5f\sin^{\frac{5}{2}}(e+fx)}-\frac{4}{15f^2\sin^{\frac{3}{2}}(e+fx)}-\frac{6x\cos(e+fx)}{5f\sqrt{\sin(e+fx)}}+\frac{12\sqrt{\sin}}{5}$$

Mathematica [A] time = 0.68, size = 58, normalized size = 0.70

$$\frac{46\sin(e+fx)-18\sin(3(e+fx))-21fx\cos(e+fx)+9fx\cos(3(e+fx))}{30f^2\sin^{\frac{5}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Sin[e + f*x]^(7/2) + (3*x*Sqrt[Sin[e + f*x]])/5,x]
```

```
[Out] (-21*f*x*Cos[e + f*x] + 9*f*x*Cos[3*(e + f*x)] + 46*Sin[e + f*x] - 18*Sin[3
*(e + f*x)])/(30*f^2*Sin[e + f*x]^(5/2))
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)^(7/2)+3/5*x*sin(f*x+e)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int \frac{3}{5}x\sqrt{\sin\left(fx+e\right)}+\frac{x}{\sin\left(fx+e\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)^(7/2)+3/5*x*sin(f*x+e)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(3/5*x*sqrt(sin(f*x + e)) + x/sin(f*x + e)^(7/2), x)
```

maple [F] time = 0.27, size = 0, normalized size = 0.00

$$\int \frac{x}{\sin \left(f x+e\right)^{\frac{7}{2}}}+\frac{3 x \left(\sqrt{\sin}\, \left(f x+e\right)\right)}{5}d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/sin(f*x+e)^(7/2)+3/5*x*sin(f*x+e)^(1/2),x)
```

```
[Out] int(x/sin(f*x+e)^(7/2)+3/5*x*sin(f*x+e)^(1/2),x)
```

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

$$\int \frac{3}{5} \, x \sqrt{\sin \left(f x+e\right)}+\frac{x}{\sin \left(f x+e\right)^{\frac{7}{2}}}\,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)^(7/2)+3/5*x*sin(f*x+e)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(3/5*x*sqrt(sin(f*x + e)) + x/sin(f*x + e)^(7/2), x)
```

mupad [B] time = 4.49, size = 253, normalized size = 3.05

$$\left(\frac{12}{5\,f^2}+\frac{x\,6{}\mathrm{i}}{5\,f}\right)\,\sqrt{\frac{{\mathrm{e}}^{-e\,1{}\mathrm{i}-f\,x\,1{}\mathrm{i}}\,1{}\mathrm{i}}{2}-\frac{{\mathrm{e}}^{e\,1{}\mathrm{i}+f\,x\,1{}\mathrm{i}}\,1{}\mathrm{i}}{2}}-\frac{{\mathrm{e}}^{e\,2{}\mathrm{i}+f\,x\,2{}\mathrm{i}}\,\sqrt{\frac{{\mathrm{e}}^{-e\,1{}\mathrm{i}-f\,x\,1{}\mathrm{i}}\,1{}\mathrm{i}}{2}-\frac{{\mathrm{e}}^{e\,1{}\mathrm{i}+f\,x\,1{}\mathrm{i}}\,1{}\mathrm{i}}{2}}\,\left(\frac{x\,3{}\mathrm{i}}{5\,f}-\frac{32+f\,x\,66{}\mathrm{i}}{30\,f^2}\right)}{{\left({\mathrm{e}}^{e\,2{}\mathrm{i}+f\,x\,2{}\mathrm{i}}-1\right)}^2}-\frac{x\,{\mathrm{e}}^{e\,2{}\mathrm{i}+f\,x\,2{}\mathrm{i}}\,\cdots}{5\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x*sin(e + f*x)^(1/2))/5 + x/sin(e + f*x)^(7/2),x)
```

```
[Out] ((x*6i)/(5*f) + 12/(5*f^2))*((exp(- e*1i - f*x*1i)*1i)/2 - (exp(e*1i + f*x*
1i)*1i)/2)^(1/2) - (exp(e*2i + f*x*2i)*((exp(- e*1i - f*x*1i)*1i)/2 - (exp(
e*1i + f*x*1i)*1i)/2)^(1/2)*((x*3i)/(5*f) - (f*x*66i + 32)/(30*f^2)))/(exp(
e*2i + f*x*2i) - 1)^2 - (x*exp(e*2i + f*x*2i)*((exp(- e*1i - f*x*1i)*1i)/2
- (exp(e*1i + f*x*1i)*1i)/2)^(1/2)*12i)/(5*f*(exp(e*2i + f*x*2i) - 1)) + (x
*exp(e*2i + f*x*2i)*((exp(- e*1i - f*x*1i)*1i)/2 - (exp(e*1i + f*x*1i)*1i)/
2)^(1/2)*16i)/(5*f*(exp(e*2i + f*x*2i) - 1)^3)
```

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

$$\frac{\int \frac{5 x}{\sin^{\frac{7}{2}}{\left(e+f x \right)}}\, dx + \int 3 x \sqrt{\sin{\left(e+f x \right)}}\, dx}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sin(f*x+e)**(7/2)+3/5*x*sin(f*x+e)**(1/2),x)
```

```
[Out] (Integral(5*x/sin(e + f*x)**(7/2), x) + Integral(3*x*sqrt(sin(e + f*x)), x)
)/5
```

3.71 $\int (c+dx)^m (b\sin(e+fx))^n \, dx$

Optimal. Leaf size=21

$$\mathrm{Int}\left((c+dx)^m (b\sin(e+fx))^n, x\right)$$

```
[Out] Unintegrable((d*x+c)^m*(b*sin(f*x+e))^n,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (c+dx)^m (b\sin(e+fx))^n \, dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m*(b*Sin[e + f*x])^n,x]
[Out] Defer[Int][(c + d*x)^m*(b*Sin[e + f*x])^n, x]
```

Rubi steps

$$\int (c+dx)^m (b\sin(e+fx))^n \, dx = \int (c+dx)^m (b\sin(e+fx))^n \, dx$$

Mathematica [A] time = 0.87, size = 0, normalized size = 0.00

$$\int (c+dx)^m (b\sin(e+fx))^n \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m*(b*Sin[e + f*x])^n,x]
[Out] Integrate[(c + d*x)^m*(b*Sin[e + f*x])^n, x]
```

fricas [A] time = 0.71, size = 0, normalized size = 0.00

$$\mathrm{integral}\left((dx+c)^m \left(b\sin\left(fx+e\right)\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(b*sin(f*x+e))^n,x, algorithm="fricas")
[Out] integral((d*x + c)^m*(b*sin(f*x + e))^n, x)
```

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

$$\int (dx+c)^m \left(b \sin\left(fx+e\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(b*sin(f*x+e))^n,x, algorithm="giac")
[Out] integrate((d*x + c)^m*(b*sin(f*x + e))^n, x)
```

maple [A] time = 0.34, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(b \sin\left(fx+e\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(b*sin(f*x+e))^n,x)
[Out] int((d*x+c)^m*(b*sin(f*x+e))^n,x)
```

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

$$\int (dx+c)^m \left(b \sin\left(fx+e\right)\right)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(b*sin(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((d*x + c)^m*(b*sin(f*x + e))^n, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int {\left(b\,\sin\left(e+f\,x\right)\right)}^n\,{\left(c+d\,x\right)}^m \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*sin(e + f*x))^n*(c + d*x)^m,x)
[Out] int((b*sin(e + f*x))^n*(c + d*x)^m, x)
```

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

$$\int \left(b \sin\left(e+fx\right)\right)^n (c+dx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(b*sin(f*x+e))**n,x)
[Out] Integral((b*sin(e + f*x))**n*(c + d*x)**m, x)
```

3.72 $\int (c+dx)^m \sin^3(a+bx)\,dx$

Optimal. Leaf size=267

$$-\frac{3e^{i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{ib(c+dx)}{d}\right)}{8b}+\frac{3^{-m-1}e^{3i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{3ib(c+dx)}{d}\right)}{8b}$$

```
[Out] -3/8*exp(I*(a-b*c/d))*(d*x+c)^m*GAMMA(1+m,-I*b*(d*x+c)/d)/b/((-I*b*(d*x+c)/
d)^m)-3/8*(d*x+c)^m*GAMMA(1+m,I*b*(d*x+c)/d)/b/exp(I*(a-b*c/d))/((I*b*(d*x+
c)/d)^m)+1/8*3^(-1-m)*exp(3*I*(a-b*c/d))*(d*x+c)^m*GAMMA(1+m,-3*I*b*(d*x+c)
/d)/b/((-I*b*(d*x+c)/d)^m)+1/8*3^(-1-m)*(d*x+c)^m*GAMMA(1+m,3*I*b*(d*x+c)/d
)/b/exp(3*I*(a-b*c/d))/((I*b*(d*x+c)/d)^m)
```

Rubi [A] time = 0.30, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {3312, 3308, 2181}

$$-\frac{3e^{i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{ib(c+dx)}{d}\right)}{8b}+\frac{3^{-m-1}e^{3i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m\right.}{8b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*Sin[a + b*x]^3,x]
```

```
[Out] (-3*E^(I*(a - (b*c)/d))*(c + d*x)^m*Gamma[1 + m, ((-I)*b*(c + d*x))/d])/(8*
b*(((-I)*b*(c + d*x))/d)^m) - (3*(c + d*x)^m*Gamma[1 + m, (I*b*(c + d*x))/d
])/(8*b*E^(I*(a - (b*c)/d))*((I*b*(c + d*x))/d)^m) + (3^(-1 - m)*E^((3*I)*(
a - (b*c)/d))*(c + d*x)^m*Gamma[1 + m, ((-3*I)*b*(c + d*x))/d])/(8*b*(((-I)
*b*(c + d*x))/d)^m) + (3^(-1 - m)*(c + d*x)^m*Gamma[1 + m, ((3*I)*b*(c + d*
x))/d])/(8*b*E^((3*I)*(a - (b*c)/d))*((I*b*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}\int (c+dx)^m \sin^3(a+bx)\,dx &= \int \left(\frac{3}{4}(c+dx)^m \sin(a+bx) - \frac{1}{4}(c+dx)^m \sin(3a+3bx)\right) dx \\ &= -\left(\frac{1}{4}\int (c+dx)^m \sin(3a+3bx)\,dx\right) + \frac{3}{4}\int (c+dx)^m \sin(a+bx)\,dx \\ &= -\left(\frac{1}{8}i\int e^{-i(3a+3bx)}(c+dx)^m\,dx\right) + \frac{1}{8}i\int e^{i(3a+3bx)}(c+dx)^m\,dx + \frac{3}{8}i\int e^{-i(a+bx)}(c+ \\ &= -\frac{3e^{i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{ib(c+dx)}{d}\right)}{8b} - \frac{3e^{-i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(\frac{ib(c+dx)}{d}\right.}{8b}\end{aligned}$$

Mathematica [A] time = 10.58, size = 251, normalized size = 0.94

$$\frac{3^{-m-1}e^{-\frac{3i(ad+bc)}{d}}(c+dx)^m\left(\frac{b^2(c+dx)^2}{d^2}\right)^{-m}\left(-3^{m+2}e^{2ia+\frac{4ibc}{d}}\left(-\frac{ib(c+dx)}{d}\right)^m\Gamma\left(m+1,\frac{ib(c+dx)}{d}\right)-3^{m+2}e^{2i\left(2a+\frac{bc}{d}\right)}\left(\frac{ib(c+dx)}{d}\right)^m\Gamma\right.}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*Sin[a + b*x]^3,x]
```

```
[Out] (3^(-1 - m)*(c + d*x)^m*(-(3^(2 + m)*E^((2*I)*(2*a + (b*c)/d))*((I*b*(c + d
*x))/d)^m*Gamma[1 + m, ((-I)*b*(c + d*x))/d]) - 3^(2 + m)*E^((2*I)*a + ((4*
I)*b*c)/d)*(((-I)*b*(c + d*x))/d)^m*Gamma[1 + m, (I*b*(c + d*x))/d] + E^((6
*I)*a)*((I*b*(c + d*x))/d)^m*Gamma[1 + m, ((-3*I)*b*(c + d*x))/d] + E^(((6*
I)*b*c)/d)*(((-I)*b*(c + d*x))/d)^m*Gamma[1 + m, ((3*I)*b*(c + d*x))/d]))/(
8*b*E^(((3*I)*(b*c + a*d))/d)*((b^2*(c + d*x)^2)/d^2)^m)
```

fricas [A] time = 0.74, size = 184, normalized size = 0.69

$$\frac{e^{\left(-\frac{dm\log\left(\frac{3ib}{d}\right)-3ibc+3iad}{d}\right)}\Gamma\left(m+1,\frac{3ibdx+3ibc}{d}\right)-9e^{\left(-\frac{dm\log\left(\frac{ib}{d}\right)-ibc+iad}{d}\right)}\Gamma\left(m+1,\frac{ibdx+ibc}{d}\right)-9e^{\left(-\frac{dm\log\left(-\frac{ib}{d}\right)+ibc-iad}{d}\right)}\Gamma\left(m+1,\right.}{24b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sin(b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/24*(e^(-(d*m*log(3*I*b/d) - 3*I*b*c + 3*I*a*d)/d)*gamma(m + 1, (3*I*b*d*x
 + 3*I*b*c)/d) - 9*e^(-(d*m*log(I*b/d) - I*b*c + I*a*d)/d)*gamma(m + 1, (I*
b*d*x + I*b*c)/d) - 9*e^(-(d*m*log(-I*b/d) + I*b*c - I*a*d)/d)*gamma(m + 1,
 (-I*b*d*x - I*b*c)/d) + e^(-(d*m*log(-3*I*b/d) + 3*I*b*c - 3*I*a*d)/d)*gam
ma(m + 1, (-3*I*b*d*x - 3*I*b*c)/d))/b
```

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

$$\int (dx+c)^m \sin(bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sin(b*x+a)^3,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*sin(b*x + a)^3, x)
```

maple [F] time = 0.31, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(\sin^3(bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*sin(b*x+a)^3,x)
```

```
[Out] int((d*x+c)^m*sin(b*x+a)^3,x)
```

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

$$\int (dx+c)^m \sin(bx+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sin(b*x+a)^3,x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^m*sin(b*x + a)^3, x)
```

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

$$\int \sin(a+b\,x)^3\,(c+d\,x)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^3*(c + d*x)^m,x)
```

```
[Out] int(sin(a + b*x)^3*(c + d*x)^m, x)
```

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

$$\int (c + dx)^m \sin^3 (a + bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*sin(b*x+a)**3,x)
```

```
[Out] Integral((c + d*x)**m*sin(a + b*x)**3, x)
```

3.73 $\int (c+dx)^m \sin^2(a+bx)\,dx$

Optimal. Leaf size=162

$$\frac{i2^{-m-3}e^{2i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{2ib(c+dx)}{d}\right)}{b}-\frac{i2^{-m-3}e^{-2i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{2ib(c+dx)}{d}\right)}{b}$$

```
[Out] 1/2*(d*x+c)^(1+m)/d/(1+m)+I*2^(-3-m)*exp(2*I*(a-b*c/d))*(d*x+c)^m*GAMMA(1+m
,-2*I*b*(d*x+c)/d)/b/((-I*b*(d*x+c)/d)^m)-I*2^(-3-m)*(d*x+c)^m*GAMMA(1+m,2*
I*b*(d*x+c)/d)/b/exp(2*I*(a-b*c/d))/((I*b*(d*x+c)/d)^m)
```

Rubi [A] time = 0.22, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {3312, 3307, 2181}

$$\frac{i2^{-m-3}e^{2i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{2ib(c+dx)}{d}\right)}{b}-\frac{i2^{-m-3}e^{-2i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(\frac{ib(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,\frac{2ib(c+dx)}{d}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*Sin[a + b*x]^2,x]
```

```
[Out] (c + d*x)^(1 + m)/(2*d*(1 + m)) + (I*2^(-3 - m)*E^((2*I)*(a - (b*c)/d))*(c
+ d*x)^m*Gamma[1 + m, ((-2*I)*b*(c + d*x))/d])/(b*(((-I)*b*(c + d*x))/d)^m)
 - (I*2^(-3 - m)*(c + d*x)^m*Gamma[1 + m, ((2*I)*b*(c + d*x))/d])/(b*E^((2*
I)*(a - (b*c)/d))*((I*b*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}\int (c+dx)^m \sin^2(a+bx)\,dx &= \int \left(\frac{1}{2}(c+dx)^m - \frac{1}{2}(c+dx)^m \cos(2a+2bx)\right) dx\\ &= \frac{(c+dx)^{1+m}}{2d(1+m)} - \frac{1}{2}\int (c+dx)^m \cos(2a+2bx)\,dx\\ &= \frac{(c+dx)^{1+m}}{2d(1+m)} - \frac{1}{4}\int e^{-i(2a+2bx)}(c+dx)^m\,dx - \frac{1}{4}\int e^{i(2a+2bx)}(c+dx)^m\,dx\\ &= \frac{(c+dx)^{1+m}}{2d(1+m)} + \frac{i2^{-3-m}e^{2i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{2ib(c+dx)}{d}\right)}{b} - \frac{i2^{-3-m}}{}\end{aligned}$$

Mathematica [A] time = 0.71, size = 211, normalized size = 1.30

$$\frac{2^{-m-3}(c+dx)^m\left(\frac{b^2(c+dx)^2}{d^2}\right)^{-m}\left(-id(m+1)\left(-\frac{ib(c+dx)}{d}\right)^m\left(\cos\left(2a-\frac{2bc}{d}\right)-i\sin\left(2a-\frac{2bc}{d}\right)\right)\Gamma\left(m+1,\frac{2ib(c+dx)}{d}\right)+id(}{bd(m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*Sin[a + b*x]^2,x]
```

```
[Out] (2^(-3 - m)*(c + d*x)^m*(2^(2 + m)*b*(c + d*x)*((b^2*(c + d*x)^2)/d^2)^m -
I*d*(1 + m)*(((-I)*b*(c + d*x))/d)^m*Gamma[1 + m, ((2*I)*b*(c + d*x))/d]*(C
os[2*a - (2*b*c)/d] - I*Sin[2*a - (2*b*c)/d]) + I*d*(1 + m)*((I*b*(c + d*x)
)/d)^m*Gamma[1 + m, ((-2*I)*b*(c + d*x))/d]*(Cos[2*a - (2*b*c)/d] + I*Sin[2
*a - (2*b*c)/d])))/(b*d*(1 + m)*((b^2*(c + d*x)^2)/d^2)^m)
```

fricas [A] time = 0.81, size = 134, normalized size = 0.83

$$\frac{(-idm-id)e^{\left(-\frac{dm\log\left(\frac{2ib}{d}\right)-2ibc+2iad}{d}\right)}\Gamma\left(m+1,\frac{2ibdx+2ibc}{d}\right)+(idm+id)e^{\left(-\frac{dm\log\left(-\frac{2ib}{d}\right)+2ibc-2iad}{d}\right)}\Gamma\left(m+1,\frac{-2ibdx-2ibc}{d}\right)+4}{8\left(bdm+bd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((-I*d*m - I*d)*e^(-(d*m*log(2*I*b/d) - 2*I*b*c + 2*I*a*d)/d)*gamma(m +
 1, (2*I*b*d*x + 2*I*b*c)/d) + (I*d*m + I*d)*e^(-(d*m*log(-2*I*b/d) + 2*I*b
*c - 2*I*a*d)/d)*gamma(m + 1, (-2*I*b*d*x - 2*I*b*c)/d) + 4*(b*d*x + b*c)*(
d*x + c)^m)/(b*d*m + b*d)
```

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

$$\int (dx+c)^m \sin(bx+a)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*sin(b*x + a)^2, x)
```

maple [F] time = 0.20, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(\sin^2(bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*sin(b*x+a)^2,x)
```

```
[Out] int((d*x+c)^m*sin(b*x+a)^2,x)
```

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

$$-\frac{(dm+d)\int (dx+c)^m \cos(2\,bx+2\,a)\,dx - e^{\left(m\log(dx+c)+\log(dx+c)\right)}}{2\,(dm+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*((d*m + d)*integrate((d*x + c)^m*cos(2*b*x + 2*a), x) - e^(m*log(d*x +
 c) + log(d*x + c)))/(d*m + d)
```

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

$$\int \sin(a+b\,x)^2\,(c+d\,x)^m \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)^2*(c + d*x)^m,x)
```

```
[Out] int(sin(a + b*x)^2*(c + d*x)^m, x)
```

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

$$\int (c+dx)^m \sin^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*sin(b*x+a)**2,x)
```

```
[Out] Integral((c + d*x)**m*sin(a + b*x)**2, x)
```

3.74 $\int (c+dx)^m \sin(a+bx)\,dx$

Optimal. Leaf size=127

$$-\frac{e^{i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{ib(c+dx)}{d}\right)}{2b}-\frac{e^{-i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{ib(c+dx)}{d}\right)}{2b}$$

```
[Out] -1/2*exp(I*(a-b*c/d))*(d*x+c)^m*GAMMA(1+m,-I*b*(d*x+c)/d)/b/((-I*b*(d*x+c)/
d)^m)-1/2*(d*x+c)^m*GAMMA(1+m,I*b*(d*x+c)/d)/b/exp(I*(a-b*c/d))/((I*b*(d*x+
c)/d)^m)
```

Rubi [A] time = 0.09, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {3308, 2181}

$$-\frac{e^{i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{ib(c+dx)}{d}\right)}{2b}-\frac{e^{-i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(\frac{ib(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,\frac{ib(c+dx)}{d}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*Sin[a + b*x],x]
```

```
[Out] -(E^(I*(a - (b*c)/d))*(c + d*x)^m*Gamma[1 + m, ((-I)*b*(c + d*x))/d])/(2*b*
(((-I)*b*(c + d*x))/d)^m) - ((c + d*x)^m*Gamma[1 + m, (I*b*(c + d*x))/d])/(
2*b*E^(I*(a - (b*c)/d))*((I*b*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\int (c+dx)^m \sin(a+bx)\,dx = \frac{1}{2}i\int e^{-i(a+bx)}(c+dx)^m\,dx - \frac{1}{2}i\int e^{i(a+bx)}(c+dx)^m\,dx$$
$$= -\frac{e^{i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(-\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{ib(c+dx)}{d}\right)}{2b} - \frac{e^{-i\left(a-\frac{bc}{d}\right)}(c+dx)^m\left(\frac{ib(c+dx)}{d}\right)^{-m}}{2b}$$

Mathematica [A] time = 0.05, size = 121, normalized size = 0.95

$$\frac{e^{-\frac{i(ad+bc)}{d}}(c+dx)^m\left(-e^{2ia}\left(-\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{ib(c+dx)}{d}\right)-e^{\frac{2ibc}{d}}\left(\frac{ib(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{ib(c+dx)}{d}\right)\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*Sin[a + b*x],x]
```

```
[Out] ((c + d*x)^m*(-((E^((2*I)*a)*Gamma[1 + m, ((-I)*b*(c + d*x))/d])/(((-I)*b*(
c + d*x))/d)^m) - (E^(((2*I)*b*c)/d)*Gamma[1 + m, (I*b*(c + d*x))/d])/((I*b
*(c + d*x))/d)^m))/(2*b*E^((I*(b*c + a*d))/d))
```

fricas [A] time = 0.71, size = 94, normalized size = 0.74

$$-\frac{e^{\left(-\frac{dm\log\left(\frac{ib}{d}\right)-ibc+iad}{d}\right)}\Gamma\left(m+1,\frac{ibdx+ibc}{d}\right)+e^{\left(-\frac{dm\log\left(-\frac{ib}{d}\right)+ibc-iad}{d}\right)}\Gamma\left(m+1,\frac{-ibdx-ibc}{d}\right)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/2*(e^(-(d*m*log(I*b/d) - I*b*c + I*a*d)/d)*gamma(m + 1, (I*b*d*x + I*b*c
)/d) + e^(-(d*m*log(-I*b/d) + I*b*c - I*a*d)/d)*gamma(m + 1, (-I*b*d*x - I*
b*c)/d))/b
```

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

$$\int (dx+c)^m \sin(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sin(b*x+a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m*sin(b*x + a), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int (dx+c)^m \sin(bx+a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*sin(b*x+a),x)
[Out] int((d*x+c)^m*sin(b*x+a),x)
```

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

$$\int (dx+c)^m \sin(bx+a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*sin(b*x+a),x, algorithm="maxima")
[Out] integrate((d*x + c)^m*sin(b*x + a), x)
```

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

$$\int \sin(a+b\,x)\,(c+d\,x)^m\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(a + b*x)*(c + d*x)^m,x)
[Out] int(sin(a + b*x)*(c + d*x)^m, x)
```

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

$$\int (c+dx)^m \sin(a+bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*sin(b*x+a),x)
[Out] Integral((c + d*x)**m*sin(a + b*x), x)
```

3.75 $\int (c+dx)^m \csc(a+bx)\,dx$

Optimal. Leaf size=17

$$\mathrm{Int}\left(\csc(a+bx)(c+dx)^m, x\right)$$

```
[Out] Unintegrable((d*x+c)^m*csc(b*x+a),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}} =$ 0.000, Rules used = {}

$$\int (c+dx)^m \csc(a+bx)\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m*Csc[a + b*x],x]
[Out] Defer[Int][(c + d*x)^m*Csc[a + b*x], x]
```

Rubi steps

$$\int (c+dx)^m \csc(a+bx)\,dx = \int (c+dx)^m \csc(a+bx)\,dx$$

Mathematica [A] time = 5.71, size = 0, normalized size = 0.00

$$\int (c+dx)^m \csc(a+bx)\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m*Csc[a + b*x],x]
[Out] Integrate[(c + d*x)^m*Csc[a + b*x], x]
```

fricas [A] time = 0.74, size = 0, normalized size = 0.00

$$\mathrm{integral}\left((dx+c)^m \csc(bx+a), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csc(b*x+a),x, algorithm="fricas")
[Out] integral((d*x + c)^m*csc(b*x + a), x)
```

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

$$\int (dx + c)^m \csc (bx + a) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csc(b*x+a),x, algorithm="giac")
[Out] integrate((d*x + c)^m*csc(b*x + a), x)
```

maple [A]   time = 0.06, size = 0, normalized size = 0.00

$$\int (dx + c)^m \csc (bx + a) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*csc(b*x+a),x)
[Out] int((d*x+c)^m*csc(b*x+a),x)
```

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

$$\int (dx + c)^m \csc (bx + a) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csc(b*x+a),x, algorithm="maxima")
[Out] integrate((d*x + c)^m*csc(b*x + a), x)
```

mupad [A]   time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{(c + d\,x)^m}{\sin (a + b\,x)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/sin(a + b*x),x)
[Out] int((c + d*x)^m/sin(a + b*x), x)
```

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

$$\int (c + dx)^m \csc (a + bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*csc(b*x+a),x)
[Out] Integral((c + d*x)**m*csc(a + b*x), x)
```

3.76 $\int (c+dx)^m \csc^2(a+bx)\,dx$

Optimal. Leaf size=19

$$\text{Int}\left(\csc^2(a+bx)(c+dx)^m,x\right)$$

```
[Out] Unintegrable((d*x+c)^m*csc(b*x+a)^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (c+dx)^m \csc^2(a+bx)\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m*Csc[a + b*x]^2,x]
```

```
[Out] Defer[Int][(c + d*x)^m*Csc[a + b*x]^2, x]
```

Rubi steps

$$\int (c+dx)^m \csc^2(a+bx)\,dx = \int (c+dx)^m \csc^2(a+bx)\,dx$$

Mathematica [A] time = 1.23, size = 0, normalized size = 0.00

$$\int (c+dx)^m \csc^2(a+bx)\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m*Csc[a + b*x]^2,x]
```

```
[Out] Integrate[(c + d*x)^m*Csc[a + b*x]^2, x]
```

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left((dx+c)^m \csc(bx+a)^2,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csc(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m*csc(b*x + a)^2, x)
```

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

$$\int (dx+c)^m \csc(bx+a)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csc(b*x+a)^2,x, algorithm="giac")
[Out] integrate((d*x + c)^m*csc(b*x + a)^2, x)
```

maple [A] time = 0.05, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(\csc^2(bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*csc(b*x+a)^2,x)
[Out] int((d*x+c)^m*csc(b*x+a)^2,x)
```

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

$$\int (dx+c)^m \csc(bx+a)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*csc(b*x+a)^2,x, algorithm="maxima")
[Out] integrate((d*x + c)^m*csc(b*x + a)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{(c+d\,x)^m}{\sin(a+b\,x)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/sin(a + b*x)^2,x)
[Out] int((c + d*x)^m/sin(a + b*x)^2, x)
```

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

$$\int (c+dx)^m \csc^2(a+bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*csc(b*x+a)**2,x)
[Out] Integral((c + d*x)**m*csc(a + b*x)**2, x)
```

3.77 $\int x^{3+m} \sin(a+bx)\, dx$

Optimal. Leaf size=79

$$\frac{ie^{ia}x^m(-ibx)^{-m}\Gamma(m+4,-ibx)}{2b^4}-\frac{ie^{-ia}x^m(ibx)^{-m}\Gamma(m+4,ibx)}{2b^4}$$

```
[Out] 1/2*I*exp(I*a)*x^m*GAMMA(4+m,-I*b*x)/b^4/((-I*b*x)^m)-1/2*I*x^m*GAMMA(4+m,I
*b*x)/b^4/exp(I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.08, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{ie^{ia}x^m(-ibx)^{-m}\text{Gamma}(m+4,-ibx)}{2b^4}-\frac{ie^{-ia}x^m(ibx)^{-m}\text{Gamma}(m+4,ibx)}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3 + m)*Sin[a + b*x],x]
```

```
[Out] ((I/2)*E^(I*a)*x^m*Gamma[4 + m, (-I)*b*x])/(b^4*((-I)*b*x)^m) - ((I/2)*x^m*
Gamma[4 + m, I*b*x])/(b^4*E^(I*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{3+m}\sin(a+bx)\,dx &= \frac{1}{2}i\int e^{-i(a+bx)}x^{3+m}\,dx-\frac{1}{2}i\int e^{i(a+bx)}x^{3+m}\,dx\\ &= \frac{ie^{ia}x^m(-ibx)^{-m}\Gamma(4+m,-ibx)}{2b^4}-\frac{ie^{-ia}x^m(ibx)^{-m}\Gamma(4+m,ibx)}{2b^4}\end{aligned}$$

Mathematica [A] time = 0.02, size = 79, normalized size = 1.00

$$\frac{ie^{ia}x^m(-ibx)^{-m}\Gamma(m+4,-ibx)}{2b^4}-\frac{ie^{-ia}x^m(ibx)^{-m}\Gamma(m+4,ibx)}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3 + m)*Sin[a + b*x],x]
```

```
[Out] ((I/2)*E^(I*a)*x^m*Gamma[4 + m, (-I)*b*x])/(b^4*((-I)*b*x)^m) - ((I/2)*x^m*
Gamma[4 + m, I*b*x])/(b^4*E^(I*a)*(I*b*x)^m)
```

fricas [A] time = 0.77, size = 52, normalized size = 0.66

$$-\frac{e^{\left(-(m+3)\log(ib)-ia\right)}\Gamma(m+4,ibx)+e^{\left(-(m+3)\log(-ib)+ia\right)}\Gamma(m+4,-ibx)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/2*(e^(-(m + 3)*log(I*b) - I*a)*gamma(m + 4, I*b*x) + e^(-(m + 3)*log(-I*
b) + I*a)*gamma(m + 4, -I*b*x))/b
```

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

$$\int x^{m+3}\sin(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sin(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m + 3)*sin(b*x + a), x)
```

maple [C] time = 0.16, size = 454, normalized size = 5.75

$$2^{3+m}\left(b^2\right)^{-\frac{m}{2}}\sqrt{\pi}\left(\frac{3\,2^{-4-m}x^{3+m}b^3\left(b^2\right)^{\frac{m}{2}}\left(\frac{8}{3}+\frac{2m}{3}\right)\sin(bx)}{\sqrt{\pi}\,(4+m)}-\frac{2^{-3-m}x^{1+m}b\left(b^2\right)^{\frac{m}{2}}\left(-m^2-7m-12\right)(\cos(bx)xb-\sin(bx))}{\sqrt{\pi}\,(4+m)}+\frac{2^{-3-m}x^{2+m}b^2\left(b^2\right)^{\frac{m}{2}}(-}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3+m)*sin(b*x+a),x)
```

```
[Out] 2^(3+m)/b^4*(b^2)^(-1/2*m)*Pi^(1/2)*(3*2^(-4-m)/Pi^(1/2)/(4+m)*x^(3+m)*b^3*
(b^2)^(1/2*m)*(8/3+2/3*m)*sin(b*x)-2^(-3-m)/Pi^(1/2)/(4+m)*x^(1+m)*b*(b^2)^
```

```
(1/2*m)*(-m^2-7*m-12)*(cos(b*x)*x*b-sin(b*x))+2^(-3-m)/Pi^(1/2)/(4+m)*x^(2+
m)*b^2*(b^2)^(1/2*m)*(-m^3-8*m^2-19*m-12)*(b*x)^(-3/2-m)*LommelS1(m+3/2,3/2
,b*x)*sin(b*x)-2^(-3-m)/Pi^(1/2)*x^(2+m)*b^2*(b^2)^(1/2*m)*(2+m)*(1+m)*(3+m
)*(b*x)^(-5/2-m)*(cos(b*x)*x*b-sin(b*x))*LommelS1(m+1/2,1/2,b*x))*sin(a)+2^
(3+m)*b^(-4-m)*Pi^(1/2)*(2^(-3-m)/Pi^(1/2)/(5+m)*x^(2+m)*b^(2+m)*(m^2+7*m+1
0)*sin(b*x)-2^(-3-m)/Pi^(1/2)*x^(2+m)*b^(2+m)*(cos(b*x)*x*b-sin(b*x))-2^(-3
-m)/Pi^(1/2)*x^(2+m)*b^(2+m)*m*(3+m)*(2+m)*(b*x)^(-3/2-m)*LommelS1(m+1/2,3/
2,b*x)*sin(b*x)+2^(-3-m)/Pi^(1/2)*x^(2+m)*b^(2+m)*(3+m)*(2+m)*(b*x)^(-5/2-m
)*(cos(b*x)*x*b-sin(b*x))*LommelS1(m+3/2,1/2,b*x))*cos(a)
```

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

$$\int x^{m+3}\sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sin(b*x+a),x, algorithm="maxima")
```

```
[Out] integrate(x^(m + 3)*sin(b*x + a), x)
```

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

$$\int x^{m+3}\,\sin\left(a+b\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 3)*sin(a + b*x),x)
```

```
[Out] int(x^(m + 3)*sin(a + b*x), x)
```

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

$$\int x^{m+3}\sin\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3+m)*sin(b*x+a),x)
```

```
[Out] Integral(x**(m + 3)*sin(a + b*x), x)
```

3.78 $\int x^{2+m} \sin(a + bx)\, dx$

Optimal. Leaf size=75

$$\frac{e^{ia} x^m (-ibx)^{-m} \Gamma(m+3, -ibx)}{2b^3} + \frac{e^{-ia} x^m (ibx)^{-m} \Gamma(m+3, ibx)}{2b^3}$$

```
[Out] 1/2*exp(I*a)*x^m*GAMMA(3+m,-I*b*x)/b^3/((-I*b*x)^m)+1/2*x^m*GAMMA(3+m,I*b*x
)/b^3/exp(I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{e^{ia} x^m (-ibx)^{-m} \text{Gamma}(m+3, -ibx)}{2b^3} + \frac{e^{-ia} x^m (ibx)^{-m} \text{Gamma}(m+3, ibx)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^(2 + m)*Sin[a + b*x],x]
```

```
[Out] (E^(I*a)*x^m*Gamma[3 + m, (-I)*b*x])/(2*b^3*((-I)*b*x)^m) + (x^m*Gamma[3 +
m, I*b*x])/(2*b^3*E^(I*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned} \int x^{2+m} \sin(a+bx)\, dx &= \frac{1}{2} i \int e^{-i(a+bx)} x^{2+m}\, dx - \frac{1}{2} i \int e^{i(a+bx)} x^{2+m}\, dx \\ &= \frac{e^{ia} x^m (-ibx)^{-m} \Gamma(3+m, -ibx)}{2b^3} + \frac{e^{-ia} x^m (ibx)^{-m} \Gamma(3+m, ibx)}{2b^3} \end{aligned}$$

Mathematica [A]   time = 0.02, size = 75, normalized size = 1.00

$$\frac{e^{ia}x^m(-ibx)^{-m}\Gamma(m+3,-ibx)}{2b^3}+\frac{e^{-ia}x^m(ibx)^{-m}\Gamma(m+3,ibx)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(2 + m)*Sin[a + b*x],x]
```

```
[Out] (E^(I*a)*x^m*Gamma[3 + m, (-I)*b*x])/(2*b^3*((-I)*b*x)^m) + (x^m*Gamma[3 +
m, I*b*x])/(2*b^3*E^(I*a)*(I*b*x)^m)
```

fricas [A]   time = 0.64, size = 52, normalized size = 0.69

$$-\frac{e^{\left(-(m+2)\log(i\,b)-i\,a\right)}\Gamma\left(m+3,i\,bx\right)+e^{\left(-(m+2)\log(-i\,b)+i\,a\right)}\Gamma\left(m+3,-i\,bx\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/2*(e^(-(m + 2)*log(I*b) - I*a)*gamma(m + 3, I*b*x) + e^(-(m + 2)*log(-I*
b) + I*a)*gamma(m + 3, -I*b*x))/b
```

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

$$\int x^{m+2}\sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sin(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m + 2)*sin(b*x + a), x)
```

maple [C]   time = 0.09, size = 353, normalized size = 4.71

$$\frac{2^{2+m}\left(b^2\right)^{-\frac{1}{2}-\frac{m}{2}}\sqrt{\pi}\left(\frac{3\,2^{-3-m}x^{2+m}\left(b^2\right)^{\frac{3}{2}+\frac{m}{2}}\left(2+\frac{2m}{3}\right)\sin(bx)}{\sqrt{\pi}\,(3+m)b}-\frac{2^{-2-m}x^{2+m}\left(b^2\right)^{\frac{3}{2}+\frac{m}{2}}(2+m)m(bx)^{-\frac{3}{2}-m}\,\mathrm{LommelS1}\left(m+\frac{1}{2},\frac{3}{2},bx\right)\sin(bx)}{\sqrt{\pi}\,b}+\frac{2^{-2-}}{}\right.}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(2+m)*sin(b*x+a),x)
```

```
[Out] 2^(2+m)/b^2*(b^2)^(-1/2-1/2*m)*Pi^(1/2)*(3*2^(-3-m)/Pi^(1/2)/(3+m)*x^(2+m)*
(b^2)^(3/2+1/2*m)*(2+2/3*m)/b*sin(b*x)-2^(-2-m)/Pi^(1/2)*x^(2+m)*(b^2)^(3/2
+1/2*m)/b*(2+m)*m*(b*x)^(-3/2-m)*LommelS1(m+1/2,3/2,b*x)*sin(b*x)+2^(-2-m)/
Pi^(1/2)*x^(2+m)*(b^2)^(3/2+1/2*m)/b*(2+m)*(b*x)^(-5/2-m)*(cos(b*x)*x*b-sin
(b*x))*LommelS1(m+3/2,1/2,b*x))*sin(a)+2^(2+m)*b^(-3-m)*Pi^(1/2)*(-2^(-2-m)
/Pi^(1/2)*x^(1+m)*b^(1+m)*(cos(b*x)*x*b-sin(b*x))+2^(-2-m)/Pi^(1/2)/(4+m)*x
^(2+m)*b^(2+m)*(m^2+5*m+4)*(b*x)^(-3/2-m)*LommelS1(m+3/2,3/2,b*x)*sin(b*x)+
2^(-2-m)/Pi^(1/2)*x^(2+m)*b^(2+m)*(2+m)*(1+m)*(b*x)^(-5/2-m)*(cos(b*x)*x*b-
sin(b*x))*LommelS1(m+1/2,1/2,b*x))*cos(a)
```

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

$$\int x^{m+2}\sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sin(b*x+a),x, algorithm="maxima")
```

```
[Out] integrate(x^(m + 2)*sin(b*x + a), x)
```

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

$$\int x^{m+2}\,\sin\left(a+b\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 2)*sin(a + b*x),x)
```

```
[Out] int(x^(m + 2)*sin(a + b*x), x)
```

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

$$\int x^{m+2}\sin\left(a+bx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(2+m)*sin(b*x+a),x)
```

```
[Out] Integral(x**(m + 2)*sin(a + b*x), x)
```

3.79 $\int x^{1+m}\sin(a+bx)\,dx$

Optimal. Leaf size=79

$$\frac{ie^{-ia}x^m(ibx)^{-m}\Gamma(m+2,ibx)}{2b^2}-\frac{ie^{ia}x^m(-ibx)^{-m}\Gamma(m+2,-ibx)}{2b^2}$$

```
[Out] -1/2*I*exp(I*a)*x^m*GAMMA(2+m,-I*b*x)/b^2/((-I*b*x)^m)+1/2*I*x^m*GAMMA(2+m,
I*b*x)/b^2/exp(I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{ie^{-ia}x^m(ibx)^{-m}\text{Gamma}(m+2,ibx)}{2b^2}-\frac{ie^{ia}x^m(-ibx)^{-m}\text{Gamma}(m+2,-ibx)}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(1 + m)*Sin[a + b*x],x]
```

```
[Out] ((-I/2)*E^(I*a)*x^m*Gamma[2 + m, (-I)*b*x])/(b^2*((-I)*b*x)^m) + ((I/2)*x^m
*Gamma[2 + m, I*b*x])/(b^2*E^(I*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{1+m}\sin(a+bx)\,dx&=\frac{1}{2}i\int e^{-i(a+bx)}x^{1+m}\,dx-\frac{1}{2}i\int e^{i(a+bx)}x^{1+m}\,dx\\&=-\frac{ie^{ia}x^m(-ibx)^{-m}\Gamma(2+m,-ibx)}{2b^2}+\frac{ie^{-ia}x^m(ibx)^{-m}\Gamma(2+m,ibx)}{2b^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 79, normalized size = 1.00

$$\frac{ie^{-ia}x^m(ibx)^{-m}\Gamma(m+2,ibx)}{2b^2}-\frac{ie^{ia}x^m(-ibx)^{-m}\Gamma(m+2,-ibx)}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(1 + m)*Sin[a + b*x],x]
```

```
[Out] ((-1/2*I)*E^(I*a)*x^m*Gamma[2 + m, (-I)*b*x])/(b^2*((-I)*b*x)^m) + ((I/2)*x
^m*Gamma[2 + m, I*b*x])/(b^2*E^(I*a)*(I*b*x)^m)
```

fricas [A] time = 0.78, size = 52, normalized size = 0.66

$$-\frac{e^{\left(-(m+1)\log(ib)-ia\right)}\Gamma\left(m+2,ibx\right)+e^{\left(-(m+1)\log(-ib)+ia\right)}\Gamma\left(m+2,-ibx\right)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/2*(e^(-(m + 1)*log(I*b) - I*a)*gamma(m + 2, I*b*x) + e^(-(m + 1)*log(-I*
b) + I*a)*gamma(m + 2, -I*b*x))/b
```

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

$$\int x^{m+1}\sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sin(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m + 1)*sin(b*x + a), x)
```

maple [C] time = 0.09, size = 290, normalized size = 3.67

$$\frac{2^{1+m}\left(b^2\right)^{-\frac{m}{2}}\sqrt{\pi}\left(\frac{2^{-1-m}x^{1+m}b\left(b^2\right)^{\frac{m}{2}}\sin(bx)}{\sqrt{\pi}\,(2+m)}+\frac{3\,2^{-2-m}x^{2+m}b^2\left(b^2\right)^{\frac{m}{2}}\left(\frac{2}{3}+\frac{2m}{3}\right)(bx)^{-\frac{3}{2}-m}\operatorname{LommelS1}\left(m+\frac{3}{2},\frac{3}{2},bx\right)\sin(bx)}{\sqrt{\pi}\,(2+m)}+\frac{2^{-1-m}x^{2+m}b^2\left(b\right.}{}\right.}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1+m)*sin(b*x+a),x)
```

```
[Out] 2^(1+m)/b^2*(b^2)^(-1/2*m)*Pi^(1/2)*(2^(-1-m)/Pi^(1/2)/(2+m)*x^(1+m)*b*(b^2
)^(1/2*m)*sin(b*x)+3*2^(-2-m)/Pi^(1/2)/(2+m)*x^(2+m)*b^2*(b^2)^(1/2*m)*(2/3
```

```
+2/3*m)*(b*x)^(-3/2-m)*LommelS1(m+3/2,3/2,b*x)*sin(b*x)+2^(-1-m)/Pi^(1/2)*x
^(2+m)*b^2*(b^2)^(1/2*m)*(1+m)*(b*x)^(-5/2-m)*(cos(b*x)*x*b-sin(b*x))*Lomme
lS1(m+1/2,1/2,b*x))*sin(a)+2^(1+m)*b^(-2-m)*Pi^(1/2)*(2^(-1-m)/Pi^(1/2)*x^(
2+m)*b^(2+m)*m*(b*x)^(-3/2-m)*LommelS1(m+1/2,3/2,b*x)*sin(b*x)-2^(-1-m)/Pi^
(1/2)*x^(2+m)*b^(2+m)*(b*x)^(-5/2-m)*(cos(b*x)*x*b-sin(b*x))*LommelS1(m+3/2
,1/2,b*x))*cos(a)
```

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

$$\int x^{m+1} \sin(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sin(b*x+a),x, algorithm="maxima")
[Out] integrate(x^(m + 1)*sin(b*x + a), x)
```

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

$$\int x^{m+1}\,\sin(a+b\,x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 1)*sin(a + b*x),x)
[Out] int(x^(m + 1)*sin(a + b*x), x)
```

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

$$\int x^{m+1} \sin(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1+m)*sin(b*x+a),x)
[Out] Integral(x**(m + 1)*sin(a + b*x), x)
```

3.80 $\int x^m \sin(a+bx)\,dx$

Optimal. Leaf size=75

$$-\frac{e^{ia}x^m(-ibx)^{-m}\Gamma(m+1,-ibx)}{2b}-\frac{e^{-ia}x^m(ibx)^{-m}\Gamma(m+1,ibx)}{2b}$$

```
[Out] -1/2*exp(I*a)*x^m*GAMMA(1+m,-I*b*x)/b/((-I*b*x)^m)-1/2*x^m*GAMMA(1+m,I*b*x)
/b/exp(I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {3308, 2181}

$$-\frac{e^{ia}x^m(-ibx)^{-m}\text{Gamma}(m+1,-ibx)}{2b}-\frac{e^{-ia}x^m(ibx)^{-m}\text{Gamma}(m+1,ibx)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*Sin[a + b*x],x]
```

```
[Out] -(E^(I*a)*x^m*Gamma[1 + m, (-I)*b*x])/(2*b*((-I)*b*x)^m) - (x^m*Gamma[1 + m
, I*b*x])/(2*b*E^(I*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^m \sin(a+bx)\,dx &= \frac{1}{2}i\int e^{-i(a+bx)}x^m\,dx-\frac{1}{2}i\int e^{i(a+bx)}x^m\,dx\\ &= -\frac{e^{ia}x^m(-ibx)^{-m}\Gamma(1+m,-ibx)}{2b}-\frac{e^{-ia}x^m(ibx)^{-m}\Gamma(1+m,ibx)}{2b}\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$-\frac{e^{ia}x^m(-ibx)^{-m}\Gamma(m+1,-ibx)}{2b}-\frac{e^{-ia}x^m(ibx)^{-m}\Gamma(m+1,ibx)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*Sin[a + b*x],x]
```

```
[Out] -1/2*(E^(I*a)*x^m*Gamma[1 + m, (-I)*b*x])/(b*((-I)*b*x)^m) - (x^m*Gamma[1 +
 m, I*b*x])/(2*b*E^(I*a)*(I*b*x)^m)
```

fricas [A] time = 0.59, size = 48, normalized size = 0.64

$$-\frac{e^{\left(-m\log(ib)-ia\right)}\Gamma\left(m+1,ibx\right)+e^{\left(-m\log(-ib)+ia\right)}\Gamma\left(m+1,-ibx\right)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/2*(e^(-m*log(I*b) - I*a)*gamma(m + 1, I*b*x) + e^(-m*log(-I*b) + I*a)*ga
mma(m + 1, -I*b*x))/b
```

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

$$\int x^m \sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sin(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^m*sin(b*x + a), x)
```

maple [C] time = 0.08, size = 378, normalized size = 5.04

$$2^m\left(b^2\right)^{-\frac{1}{2}-\frac{m}{2}}\sqrt{\pi}\left(\frac{3\,2^{-1-m}\left(b^2\right)^{\frac{1}{2}+\frac{m}{2}}x^m\left(6+2m\right)\sin\left(bx\right)}{\sqrt{\pi}\,\left(1+m\right)\left(9+3m\right)b}+\frac{\left(b^2\right)^{\frac{1}{2}+\frac{m}{2}}x^m2^{-m}\left(\cos\left(bx\right)xb-\sin\left(bx\right)\right)}{\sqrt{\pi}\,\left(1+m\right)b}+\frac{2^{-m}x^{2+m}\left(b^2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*sin(b*x+a),x)
```

```
[Out] 2^m*(b^2)^(-1/2-1/2*m)*Pi^(1/2)*(3*2^(-1-m)/Pi^(1/2)/(1+m)*(b^2)^(1/2+1/2*m
)*x^m*(6+2*m)/(9+3*m)/b*sin(b*x)+1/Pi^(1/2)/(1+m)*(b^2)^(1/2+1/2*m)*x^m*2^(
```

```
-m)/b*(cos(b*x)*x*b-sin(b*x))+2^(-m)/Pi^(1/2)/(1+m)*x^(2+m)*(b^2)^(1/2+1/2*
m)*b*m*(b*x)^(-3/2-m)*LommelS1(m+1/2,3/2,b*x)*sin(b*x)-2^(-m)/Pi^(1/2)/(1+m
)*x^(2+m)*(b^2)^(1/2+1/2*m)*b*(b*x)^(-5/2-m)*(cos(b*x)*x*b-sin(b*x))*Lommel
S1(m+3/2,1/2,b*x))*sin(a)+2^m*b^(-1-m)*Pi^(1/2)*(1/Pi^(1/2)/(2+m)*x^(1+m)*b
^(1+m)*2^(-m)*sin(b*x)-2^(-m)/Pi^(1/2)/(2+m)*x^(2+m)*b^(2+m)*(b*x)^(-3/2-m)
*LommelS1(m+3/2,3/2,b*x)*sin(b*x)-3*2^(-1-m)/Pi^(1/2)/(2+m)*x^(2+m)*b^(2+m)
*(4/3+2/3*m)*(b*x)^(-5/2-m)*(cos(b*x)*x*b-sin(b*x))*LommelS1(m+1/2,1/2,b*x)
)*cos(a)
```

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

$$\int x^m \sin(bx + a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sin(b*x+a),x, algorithm="maxima")
[Out] integrate(x^m*sin(b*x + a), x)
```

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

$$\int x^m\, \sin(a + b\, x)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*sin(a + b*x),x)
[Out] int(x^m*sin(a + b*x), x)
```

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

$$\int x^m \sin(a + bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*sin(b*x+a),x)
[Out] Integral(x**m*sin(a + b*x), x)
```

3.81 $\int x^{-1+m} \sin(a+bx)\,dx$

Optimal. Leaf size=69

$$\frac{1}{2}ie^{ia}x^m(-ibx)^{-m}\Gamma(m,-ibx)-\frac{1}{2}ie^{-ia}x^m(ibx)^{-m}\Gamma(m,ibx)$$

```
[Out] 1/2*I*exp(I*a)*x^m*GAMMA(m,-I*b*x)/((-I*b*x)^m)-1/2*I*x^m*GAMMA(m,I*b*x)/ex
p(I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{1}{2}ie^{ia}x^m(-ibx)^{-m}\text{Gamma}(m,-ibx)-\frac{1}{2}ie^{-ia}x^m(ibx)^{-m}\text{Gamma}(m,ibx)$$

Antiderivative was successfully verified.

```
[In] Int[x^(-1 + m)*Sin[a + b*x],x]
```

```
[Out] ((I/2)*E^(I*a)*x^m*Gamma[m, (-I)*b*x])/((-I)*b*x)^m - ((I/2)*x^m*Gamma[m, I
*b*x])/(E^(I*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{-1+m}\sin(a+bx)\,dx &= \frac{1}{2}i\int e^{-i(a+bx)}x^{-1+m}\,dx-\frac{1}{2}i\int e^{i(a+bx)}x^{-1+m}\,dx\\ &= \frac{1}{2}ie^{ia}x^m(-ibx)^{-m}\Gamma(m,-ibx)-\frac{1}{2}ie^{-ia}x^m(ibx)^{-m}\Gamma(m,ibx)\end{aligned}$$

Mathematica [A] time = 0.03, size = 63, normalized size = 0.91

$$\frac{1}{2}ie^{-ia}x^m\left(e^{2ia}(-ibx)^{-m}\Gamma(m,-ibx)-(ibx)^{-m}\Gamma(m,ibx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-1 + m)*Sin[a + b*x],x]
```

```
[Out] ((I/2)*x^m*((E^((2*I)*a)*Gamma[m, (-I)*b*x])/((-I)*b*x)^m - Gamma[m, I*b*x]
/(I*b*x)^m))/E^(I*a)
```

fricas [A] time = 0.75, size = 48, normalized size = 0.70

$$-\frac{e^{\left(-(m-1)\log(ib)-ia\right)}\Gamma\left(m,ibx\right)+e^{\left(-(m-1)\log(-ib)+ia\right)}\Gamma\left(m,-ibx\right)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/2*(e^(-(m - 1)*log(I*b) - I*a)*gamma(m, I*b*x) + e^(-(m - 1)*log(-I*b) +
 I*a)*gamma(m, -I*b*x))/b
```

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

$$\int x^{m-1}\sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sin(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m - 1)*sin(b*x + a), x)
```

maple [C] time = 0.09, size = 426, normalized size = 6.17

$$2^{-1+m}\left(b^2\right)^{-\frac{m}{2}}\sqrt{\pi}\left(\frac{3x^{-1+m}2^{-m}\left(b^2\right)^{\frac{m}{2}}\left(2x^2b^2+2m+4\right)\sin\left(bx\right)}{\sqrt{\pi}\,m\left(6+3m\right)b}+\frac{2^{1-m}x^{-1+m}\left(b^2\right)^{\frac{m}{2}}\left(\cos\left(bx\right)xb-\sin\left(bx\right)\right)}{\sqrt{\pi}\,mb}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(-1+m)*sin(b*x+a),x)
```

```
[Out] 2^(-1+m)*(b^2)^(-1/2*m)*Pi^(1/2)*(3/Pi^(1/2)/m*x^(-1+m)*2^(-m)*(b^2)^(1/2*m
)*(2*b^2*x^2+2*m+4)/(6+3*m)/b*sin(b*x)+2^(1-m)/Pi^(1/2)/m*x^(-1+m)*(b^2)^(1
```

```
/2*m)/b*(cos(b*x)*x*b-sin(b*x))-3/Pi^(1/2)/m*x^(2+m)*2^(1-m)*(b^2)^(1/2*m)*
b^2/(6+3*m)*(b*x)^(-3/2-m)*LommelS1(m+3/2,3/2,b*x)*sin(b*x)-1/Pi^(1/2)/m*x^
(2+m)*2^(1-m)*(b^2)^(1/2*m)*b^2*(b*x)^(-5/2-m)*(cos(b*x)*x*b-sin(b*x))*Lomm
elS1(m+1/2,1/2,b*x))*sin(a)+2^(-1+m)*b^(-m)*Pi^(1/2)*(2^(1-m)/Pi^(1/2)/(1+m
)*x^m*b^m*sin(b*x)-2^(1-m)/Pi^(1/2)/(1+m)*x^m*b^m/m*(cos(b*x)*x*b-sin(b*x))
-1/Pi^(1/2)/(1+m)*x^(2+m)*b^(2+m)*2^(1-m)*(b*x)^(-3/2-m)*LommelS1(m+1/2,3/2
,b*x)*sin(b*x)+1/Pi^(1/2)/(1+m)*x^(2+m)*b^(2+m)*2^(1-m)/m*(b*x)^(-5/2-m)*(c
os(b*x)*x*b-sin(b*x))*LommelS1(m+3/2,1/2,b*x))*cos(a)
```

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

$$\int x^{m-1}\sin(bx+a)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sin(b*x+a),x, algorithm="maxima")
```

```
[Out] integrate(x^(m - 1)*sin(b*x + a), x)
```

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

$$\int x^{m-1}\,\sin(a+b\,x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 1)*sin(a + b*x),x)
```

```
[Out] int(x^(m - 1)*sin(a + b*x), x)
```

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

$$\int x^{m-1}\sin(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-1+m)*sin(b*x+a),x)
```

```
[Out] Integral(x**(m - 1)*sin(a + b*x), x)
```

3.82 $\int x^{-2+m} \sin(a+bx)\,dx$

Optimal. Leaf size=71

$$\frac{1}{2}e^{ia}bx^m(-ibx)^{-m}\Gamma(m-1,-ibx)+\frac{1}{2}e^{-ia}bx^m(ibx)^{-m}\Gamma(m-1,ibx)$$

```
[Out] 1/2*b*exp(I*a)*x^m*GAMMA(-1+m,-I*b*x)/((-I*b*x)^m)+1/2*b*x^m*GAMMA(-1+m,I*b
*x)/exp(I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{1}{2}e^{ia}bx^m(-ibx)^{-m}\text{Gamma}(m-1,-ibx)+\frac{1}{2}e^{-ia}bx^m(ibx)^{-m}\text{Gamma}(m-1,ibx)$$

Antiderivative was successfully verified.

```
[In] Int[x^(-2 + m)*Sin[a + b*x],x]
```

```
[Out] (b*E^(I*a)*x^m*Gamma[-1 + m, (-I)*b*x])/(2*((-I)*b*x)^m) + (b*x^m*Gamma[-1
+ m, I*b*x])/(2*E^(I*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{-2+m}\sin(a+bx)\,dx &= \frac{1}{2}i\int e^{-i(a+bx)}x^{-2+m}\,dx-\frac{1}{2}i\int e^{i(a+bx)}x^{-2+m}\,dx\\ &= \frac{1}{2}be^{ia}x^m(-ibx)^{-m}\Gamma(-1+m,-ibx)+\frac{1}{2}be^{-ia}x^m(ibx)^{-m}\Gamma(-1+m,ibx)\end{aligned}$$

Mathematica [A] time = 0.02, size = 65, normalized size = 0.92

$$\frac{1}{2}e^{-ia}bx^m\left(e^{2ia}(-ibx)^{-m}\Gamma(m-1,-ibx)+(ibx)^{-m}\Gamma(m-1,ibx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-2 + m)*Sin[a + b*x],x]
```

```
[Out] (b*x^m*((E^((2*I)*a)*Gamma[-1 + m, (-I)*b*x])/((-I)*b*x)^m + Gamma[-1 + m, I*b*x]/(I*b*x)^m))/(2*E^(I*a))
```

fricas [A] time = 0.69, size = 52, normalized size = 0.73

$$-\frac{e^{\left(-(m-2)\log(i\,b)-i\,a\right)}\Gamma\left(m-1,i\,bx\right)+e^{\left(-(m-2)\log(-i\,b)+i\,a\right)}\Gamma\left(m-1,-i\,bx\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/2*(e^(-(m - 2)*log(I*b) - I*a)*gamma(m - 1, I*b*x) + e^(-(m - 2)*log(-I*b) + I*a)*gamma(m - 1, -I*b*x))/b
```

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

$$\int x^{m-2}\sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sin(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m - 2)*sin(b*x + a), x)
```

maple [C] time = 0.09, size = 529, normalized size = 7.45

$$2^{m-2}\left(b^2\right)^{-\frac{1}{2}-\frac{m}{2}}b^2\sqrt{\pi}\left(\frac{3\,2^{1-m}x^{m-2}\left(b^2\right)^{-\frac{1}{2}+\frac{m}{2}}\left(2x^2b^2+2m+2\right)\sin\left(bx\right)}{\sqrt{\pi}\,\left(-1+m\right)\left(3+3m\right)b}-\frac{2^{2-m}x^{m-2}\left(b^2\right)^{-\frac{1}{2}+\frac{m}{2}}\left(x^2b^2-m^2-m\right)(\mathrm{co}}{\sqrt{\pi}\,\left(-1+m\right)b\left(1+m\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m-2)*sin(b*x+a),x)
```

```
[Out] 2^(m-2)*(b^2)^(-1/2-1/2*m)*b^2*Pi^(1/2)*(3*2^(1-m)/Pi^(1/2)/(-1+m)*x^(m-2)*(b^2)^(-1/2+1/2*m)*(2*b^2*x^2+2*m+2)/(3+3*m)/b*sin(b*x)-2^(2-m)/Pi^(1/2)/(-
```

```
1+m)*x^(m-2)*(b^2)^(-1/2+1/2*m)/b*(b^2*x^2-m^2-m)/(1+m)/m*(cos(b*x)*x*b-sin
(b*x))-3*2^(2-m)/Pi^(1/2)/(-1+m)*x^(2+m)*(b^2)^(-1/2+1/2*m)*b^3/(3+3*m)*(b*
x)^(-3/2-m)*LommelS1(m+1/2,3/2,b*x)*sin(b*x)+2^(2-m)/Pi^(1/2)/(-1+m)*x^(2+m
)*(b^2)^(-1/2+1/2*m)*b^3/(1+m)/m*(b*x)^(-5/2-m)*(cos(b*x)*x*b-sin(b*x))*Lom
melS1(m+3/2,1/2,b*x))*sin(a)+2^(m-2)*b^(1-m)*Pi^(1/2)*(2^(1-m)/Pi^(1/2)/m*x
^(-1+m)*b^(-1+m)*(-2*b^2*x^2+2*m^2+2*m-4)/(2+m)/(-1+m)*sin(b*x)-3*2^(2-m)/P
i^(1/2)/m*x^(-1+m)*b^(-1+m)/(-3+3*m)*(cos(b*x)*x*b-sin(b*x))+2^(2-m)/Pi^(1/
2)/m*x^(2+m)*b^(2+m)/(2+m)/(-1+m)*(b*x)^(-3/2-m)*LommelS1(m+3/2,3/2,b*x)*si
n(b*x)+3*2^(2-m)/Pi^(1/2)/m*x^(2+m)*b^(2+m)/(-3+3*m)*(b*x)^(-5/2-m)*(cos(b*
x)*x*b-sin(b*x))*LommelS1(m+1/2,1/2,b*x))*cos(a)
```

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

$$\int x^{m-2} \sin(bx+a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sin(b*x+a),x, algorithm="maxima")
[Out] integrate(x^(m - 2)*sin(b*x + a), x)
```

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

$$\int x^{m-2}\, \sin(a+b\,x)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 2)*sin(a + b*x),x)
[Out] int(x^(m - 2)*sin(a + b*x), x)
```

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

$$\int x^{m-2} \sin(a+bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-2+m)*sin(b*x+a),x)
[Out] Integral(x**(m - 2)*sin(a + b*x), x)
```

3.83 $\int x^{-3+m} \sin(a+bx)\,dx$

Optimal. Leaf size=79

$$\frac{1}{2}ie^{-ia}b^2x^m(ibx)^{-m}\Gamma(m-2,ibx)-\frac{1}{2}ie^{ia}b^2x^m(-ibx)^{-m}\Gamma(m-2,-ibx)$$

```
[Out] -1/2*I*b^2*exp(I*a)*x^m*GAMMA(-2+m,-I*b*x)/((-I*b*x)^m)+1/2*I*b^2*x^m*GAMMA
(-2+m,I*b*x)/exp(I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.07, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3308, 2181}

$$\frac{1}{2}ie^{-ia}b^2x^m(ibx)^{-m}\text{Gamma}(m-2,ibx)-\frac{1}{2}ie^{ia}b^2x^m(-ibx)^{-m}\text{Gamma}(m-2,-ibx)$$

Antiderivative was successfully verified.

```
[In] Int[x^(-3 + m)*Sin[a + b*x],x]
```

```
[Out] ((-I/2)*b^2*E^(I*a)*x^m*Gamma[-2 + m, (-I)*b*x])/((-I)*b*x)^m + ((I/2)*b^2*
x^m*Gamma[-2 + m, I*b*x])/(E^(I*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rubi steps

$$\begin{aligned}\int x^{-3+m}\sin(a+bx)\,dx &= \frac{1}{2}i\int e^{-i(a+bx)}x^{-3+m}\,dx-\frac{1}{2}i\int e^{i(a+bx)}x^{-3+m}\,dx\\ &= -\frac{1}{2}ib^2e^{ia}x^m(-ibx)^{-m}\Gamma(-2+m,-ibx)+\frac{1}{2}ib^2e^{-ia}x^m(ibx)^{-m}\Gamma(-2+m,ibx)\end{aligned}$$

Mathematica [A] time = 0.02, size = 79, normalized size = 1.00

$$\frac{1}{2}ie^{-ia}b^2x^m(ibx)^{-m}\Gamma(m-2,ibx)-\frac{1}{2}ie^{ia}b^2x^m(-ibx)^{-m}\Gamma(m-2,-ibx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-3 + m)*Sin[a + b*x],x]
```

```
[Out] ((-1/2*I)*b^2*E^(I*a)*x^m*Gamma[-2 + m, (-I)*b*x])/((-I)*b*x)^m + ((I/2)*b^
2*x^m*Gamma[-2 + m, I*b*x])/(E^(I*a)*(I*b*x)^m)
```

fricas [A] time = 0.75, size = 52, normalized size = 0.66

$$-\frac{e^{\left(-(m-3)\log(ib)-ia\right)}\Gamma\left(m-2,ibx\right)+e^{\left(-(m-3)\log(-ib)+ia\right)}\Gamma\left(m-2,-ibx\right)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sin(b*x+a),x, algorithm="fricas")
```

```
[Out] -1/2*(e^(-(m - 3)*log(I*b) - I*a)*gamma(m - 2, I*b*x) + e^(-(m - 3)*log(-I*
b) + I*a)*gamma(m - 2, -I*b*x))/b
```

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

$$\int x^{m-3}\sin\left(bx+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sin(b*x+a),x, algorithm="giac")
```

```
[Out] integrate(x^(m - 3)*sin(b*x + a), x)
```

maple [C] time = 0.10, size = 599, normalized size = 7.58

$$2^{m-3}\left(b^2\right)^{-\frac{m}{2}}b^2\sqrt{\pi}\left(\frac{2^{2-m}x^{m-3}\left(b^2\right)^{\frac{m}{2}}\left(-2x^4b^4+2x^2b^2m^2+2x^2b^2m-4x^2b^2+2m^3+2m^2-4m\right)\sin\left(bx\right)}{\sqrt{\pi}\left(m-2\right)b^3m\left(2+m\right)\left(-1+m\right)}-\frac{2^{-m}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m-3)*sin(b*x+a),x)
```

```
[Out] 2^(m-3)*(b^2)^(-1/2*m)*b^2*Pi^(1/2)*(2^(2-m)/Pi^(1/2)/(m-2)*x^(m-3)/b^3*(b^
2)^(1/2*m)*(-2*b^4*x^4+2*b^2*m^2*x^2+2*b^2*m*x^2-4*b^2*x^2+2*m^3+2*m^2-4*m)
```

```
/m/(2+m)/(-1+m)*sin(b*x)-2^(-m+3)/Pi^(1/2)/(m-2)*x^(m-3)/b^3*(b^2)^(1/2*m)*
(b^2*x^2-m^2+m)/m/(-1+m)*(cos(b*x)*x*b-sin(b*x))+2^(-m+3)/Pi^(1/2)/(m-2)*x^
(2+m)*b^2*(b^2)^(1/2*m)/m/(2+m)/(-1+m)*(b*x)^(-3/2-m)*LommelS1(m+3/2,3/2,b*
x)*sin(b*x)+2^(-m+3)/Pi^(1/2)/(m-2)*x^(2+m)*b^2*(b^2)^(1/2*m)/m/(-1+m)*(b*x
)^(-5/2-m)*(cos(b*x)*x*b-sin(b*x))*LommelS1(m+1/2,1/2,b*x))*sin(a)+2^(m-3)*
b^(2-m)*Pi^(1/2)*(2^(2-m)/Pi^(1/2)/(-1+m)*x^(m-2)*b^(m-2)*(-2*b^2*x^2+2*m^2
-2*m-4)/(1+m)/(m-2)*sin(b*x)+2^(-m+3)/Pi^(1/2)/(-1+m)*x^(m-2)*b^(m-2)*(b^2*
x^2-m^2-m)/(1+m)/(m-2)/m*(cos(b*x)*x*b-sin(b*x))+2^(-m+3)/Pi^(1/2)/(-1+m)*x
^(2+m)*b^(2+m)/(1+m)/(m-2)*(b*x)^(-3/2-m)*LommelS1(m+1/2,3/2,b*x)*sin(b*x)-
2^(-m+3)/Pi^(1/2)/(-1+m)*x^(2+m)*b^(2+m)/(1+m)/(m-2)/m*(b*x)^(-5/2-m)*(cos(
b*x)*x*b-sin(b*x))*LommelS1(m+3/2,1/2,b*x))*cos(a)
```

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

$$\int x^{m-3} \sin(bx+a)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sin(b*x+a),x, algorithm="maxima")
```

```
[Out] integrate(x^(m - 3)*sin(b*x + a), x)
```

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

$$\int x^{m-3}\, \sin(a+b\,x)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 3)*sin(a + b*x),x)
```

```
[Out] int(x^(m - 3)*sin(a + b*x), x)
```

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

$$\int x^{m-3} \sin(a+bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-3+m)*sin(b*x+a),x)
```

```
[Out] Integral(x**(m - 3)*sin(a + b*x), x)
```

3.84 $\int x^{3+m} \sin^2(a + bx) \, dx$

Optimal. Leaf size=97

$$\frac{e^{2ia}2^{-m-6}x^m(-ibx)^{-m}\Gamma(m+4,-2ibx)}{b^4}+\frac{e^{-2ia}2^{-m-6}x^m(ibx)^{-m}\Gamma(m+4,2ibx)}{b^4}+\frac{x^{m+4}}{2(m+4)}$$

```
[Out] 1/2*x^(4+m)/(4+m)+2^(-6-m)*exp(2*I*a)*x^m*GAMMA(4+m,-2*I*b*x)/b^4/((-I*b*x)
^m)+2^(-6-m)*x^m*GAMMA(4+m,2*I*b*x)/b^4/exp(2*I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.16, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$\frac{e^{2ia}2^{-m-6}x^m(-ibx)^{-m}\text{Gamma}(m+4,-2ibx)}{b^4}+\frac{e^{-2ia}2^{-m-6}x^m(ibx)^{-m}\text{Gamma}(m+4,2ibx)}{b^4}+\frac{x^{m+4}}{2(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3 + m)*Sin[a + b*x]^2,x]
```

```
[Out] x^(4 + m)/(2*(4 + m)) + (2^(-6 - m)*E^((2*I)*a)*x^m*Gamma[4 + m, (-2*I)*b*x
])/(b^4*((-I)*b*x)^m) + (2^(-6 - m)*x^m*Gamma[4 + m, (2*I)*b*x])/(b^4*E^((2
*I)*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$
\begin{aligned}
\int x^{3+m}\sin^2(a+bx)\,dx &= \int \left(\frac{x^{3+m}}{2}-\frac{1}{2}x^{3+m}\cos(2a+2bx)\right)dx\\
&= \frac{x^{4+m}}{2(4+m)}-\frac{1}{2}\int x^{3+m}\cos(2a+2bx)\,dx\\
&= \frac{x^{4+m}}{2(4+m)}-\frac{1}{4}\int e^{-i(2a+2bx)}x^{3+m}\,dx-\frac{1}{4}\int e^{i(2a+2bx)}x^{3+m}\,dx\\
&= \frac{x^{4+m}}{2(4+m)}+\frac{2^{-6-m}e^{2ia}x^m(-ibx)^{-m}\Gamma(4+m,-2ibx)}{b^4}+\frac{2^{-6-m}e^{-2ia}x^m(ibx)^{-m}\Gamma(4+m,2ibx
\end{aligned}
$$

Mathematica [A] time = 0.35, size = 118, normalized size = 1.22

$$
\frac{2^{-m-6}x^m\left(b^2x^2\right)^{-m}\left((m+4)(\cos(a)-i\sin(a))^2(-ibx)^m\Gamma(m+4,2ibx)+(m+4)(\cos(a)+i\sin(a))^2(ibx)^m\Gamma(m+4,\right.}{b^4(m+4)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3 + m)*Sin[a + b*x]^2,x]
```

```
[Out] (2^(-6 - m)*x^m*(2^(5 + m)*b^4*x^4*(b^2*x^2)^m + (4 + m)*((-I)*b*x)^m*Gamma
[4 + m, (2*I)*b*x]*(Cos[a] - I*Sin[a])^2 + (4 + m)*(I*b*x)^m*Gamma[4 + m, (
-2*I)*b*x]*(Cos[a] + I*Sin[a])^2))/(b^4*(4 + m)*(b^2*x^2)^m)
```

fricas [A] time = 0.72, size = 77, normalized size = 0.79

$$
\frac{4\,bxx^{m+3}+(-i\,m-4i)e^{\left(-(m+3)\log(2i\,b)-2i\,a\right)}\Gamma\left(m+4,2i\,bx\right)+(i\,m+4i)e^{\left(-(m+3)\log(-2i\,b)+2i\,a\right)}\Gamma\left(m+4,-2i\,bx\right)}{8\left(bm+4\,b\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*(4*b*x*x^(m + 3) + (-I*m - 4*I)*e^(-(m + 3)*log(2*I*b) - 2*I*a)*gamma(m
 + 4, 2*I*b*x) + (I*m + 4*I)*e^(-(m + 3)*log(-2*I*b) + 2*I*a)*gamma(m + 4,
-2*I*b*x))/(b*m + 4*b)
```

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

$$
\int x^{m+3}\sin\left(bx+a\right)^2\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^(m + 3)*sin(b*x + a)^2, x)
```

maple [F] time = 0.14, size = 0, normalized size = 0.00

$$\int x^{3+m} \left(\sin^2 (bx + a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3+m)*sin(b*x+a)^2,x)
```

```
[Out] int(x^(3+m)*sin(b*x+a)^2,x)
```

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

$$-\frac{(m+4)\int x^3 x^m \cos (2\,bx + 2\,a)\,dx - e^{\left(m \log(x) + 4 \log(x)\right)}}{2\,(m+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3+m)*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*((m + 4)*integrate(x^3*x^m*cos(2*b*x + 2*a), x) - e^(m*log(x) + 4*log(
x)))/(m + 4)
```

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

$$\int x^{m+3} \sin (a + b\,x)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 3)*sin(a + b*x)^2,x)
```

```
[Out] int(x^(m + 3)*sin(a + b*x)^2, x)
```

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

$$\int x^{m+3} \sin^2 (a + bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3+m)*sin(b*x+a)**2,x)
```

```
[Out] Integral(x**(m + 3)*sin(a + b*x)**2, x)
```

3.85 $\int x^{2+m} \sin^2(a+bx)\,dx$

Optimal. Leaf size=103

$$-\frac{ie^{2ia}2^{-m-5}x^m(-ibx)^{-m}\Gamma(m+3,-2ibx)}{b^3}+\frac{ie^{-2ia}2^{-m-5}x^m(ibx)^{-m}\Gamma(m+3,2ibx)}{b^3}+\frac{x^{m+3}}{2(m+3)}$$

```
[Out] 1/2*x^(3+m)/(3+m)-I*2^(-5-m)*exp(2*I*a)*x^m*GAMMA(3+m,-2*I*b*x)/b^3/((-I*b*
x)^m)+I*2^(-5-m)*x^m*GAMMA(3+m,2*I*b*x)/b^3/exp(2*I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.14, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$-\frac{ie^{2ia}2^{-m-5}x^m(-ibx)^{-m}\text{Gamma}(m+3,-2ibx)}{b^3}+\frac{ie^{-2ia}2^{-m-5}x^m(ibx)^{-m}\text{Gamma}(m+3,2ibx)}{b^3}+\frac{x^{m+3}}{2(m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(2 + m)*Sin[a + b*x]^2,x]
```

```
[Out] x^(3 + m)/(2*(3 + m)) - (I*2^(-5 - m)*E^((2*I)*a)*x^m*Gamma[3 + m, (-2*I)*b
*x])/(b^3*((-I)*b*x)^m) + (I*2^(-5 - m)*x^m*Gamma[3 + m, (2*I)*b*x])/(b^3*E
^((2*I)*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}\int x^{2+m}\sin^2(a+bx)\,dx &= \int\left(\frac{x^{2+m}}{2}-\frac{1}{2}x^{2+m}\cos(2a+2bx)\right)dx\\ &= \frac{x^{3+m}}{2(3+m)}-\frac{1}{2}\int x^{2+m}\cos(2a+2bx)\,dx\\ &= \frac{x^{3+m}}{2(3+m)}-\frac{1}{4}\int e^{-i(2a+2bx)}x^{2+m}\,dx-\frac{1}{4}\int e^{i(2a+2bx)}x^{2+m}\,dx\\ &= \frac{x^{3+m}}{2(3+m)}-\frac{i2^{-5-m}e^{2ia}x^m(-ibx)^{-m}\Gamma(3+m,-2ibx)}{b^3}+\frac{i2^{-5-m}e^{-2ia}x^m(ibx)^{-m}\Gamma(3+m,2\ldots}{b^3}\end{aligned}$$

Mathematica [A] time = 0.36, size = 120, normalized size = 1.17

$$\frac{2^{-m-5}x^m\left(b^2x^2\right)^{-m}\left((m+3)(\sin(2a)+i\cos(2a))(-ibx)^m\Gamma(m+3,2ibx)+(m+3)(\sin(2a)-i\cos(2a))(ibx)^m\Gamma(m\ldots\right.}{b^3(m+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(2 + m)*Sin[a + b*x]^2,x]
```

```
[Out] (2^(-5 - m)*x^m*(2^(4 + m)*b*x*(b^2*x^2)^(1 + m) + (3 + m)*(I*b*x)^m*Gamma[
3 + m, (-2*I)*b*x]*((-I)*Cos[2*a] + Sin[2*a]) + (3 + m)*((-I)*b*x)^m*Gamma[
3 + m, (2*I)*b*x]*(I*Cos[2*a] + Sin[2*a])))/(b^3*(3 + m)*(b^2*x^2)^m)
```

fricas [A] time = 0.79, size = 77, normalized size = 0.75

$$\frac{4\,bxx^{m+2}+(-i\,m-3i)e^{\left(-(m+2)\log(2i\,b)-2i\,a\right)}\Gamma\left(m+3,2i\,bx\right)+(i\,m+3i)e^{\left(-(m+2)\log(-2i\,b)+2i\,a\right)}\Gamma\left(m+3,-2i\,bx\right)}{8\left(bm+3\,b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*(4*b*x*x^(m + 2) + (-I*m - 3*I)*e^(-(m + 2)*log(2*I*b) - 2*I*a)*gamma(m
 + 3, 2*I*b*x) + (I*m + 3*I)*e^(-(m + 2)*log(-2*I*b) + 2*I*a)*gamma(m + 3,
-2*I*b*x))/(b*m + 3*b)
```

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

$$\int x^{m+2}\sin\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^(m + 2)*sin(b*x + a)^2, x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int x^{2+m} \left(\sin^2 (bx + a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(2+m)*sin(b*x+a)^2,x)
```

```
[Out] int(x^(2+m)*sin(b*x+a)^2,x)
```

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

$$-\frac{(m+3)\int x^2 x^m \cos (2\,bx + 2\,a)\,dx - e^{\left(m \log(x) + 3 \log(x)\right)}}{2\,(m+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(2+m)*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*((m + 3)*integrate(x^2*x^m*cos(2*b*x + 2*a), x) - e^(m*log(x) + 3*log(
x)))/(m + 3)
```

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

$$\int x^{m+2} \sin (a + b\,x)^2 \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 2)*sin(a + b*x)^2,x)
```

```
[Out] int(x^(m + 2)*sin(a + b*x)^2, x)
```

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

$$\int x^{m+2} \sin^2 (a + bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(2+m)*sin(b*x+a)**2,x)
```

```
[Out] Integral(x**(m + 2)*sin(a + b*x)**2, x)
```

3.86 $\int x^{1+m} \sin^2(a+bx)\,dx$

Optimal. Leaf size=99

$$-\frac{e^{2ia}2^{-m-4}x^m(-ibx)^{-m}\Gamma(m+2,-2ibx)}{b^2}-\frac{e^{-2ia}2^{-m-4}x^m(ibx)^{-m}\Gamma(m+2,2ibx)}{b^2}+\frac{x^{m+2}}{2(m+2)}$$

```
[Out] 1/2*x^(2+m)/(2+m)-2^(-4-m)*exp(2*I*a)*x^m*GAMMA(2+m,-2*I*b*x)/b^2/((-I*b*x)
^m)-2^(-4-m)*x^m*GAMMA(2+m,2*I*b*x)/b^2/exp(2*I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.14, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$-\frac{e^{2ia}2^{-m-4}x^m(-ibx)^{-m}\text{Gamma}(m+2,-2ibx)}{b^2}-\frac{e^{-2ia}2^{-m-4}x^m(ibx)^{-m}\text{Gamma}(m+2,2ibx)}{b^2}+\frac{x^{m+2}}{2(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(1 + m)*Sin[a + b*x]^2,x]
```

```
[Out] x^(2 + m)/(2*(2 + m)) - (2^(-4 - m)*E^((2*I)*a)*x^m*Gamma[2 + m, (-2*I)*b*x
])/(b^2*((-I)*b*x)^m) - (2^(-4 - m)*x^m*Gamma[2 + m, (2*I)*b*x])/(b^2*E^((2
*I)*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\begin{aligned}\int x^{1+m}\sin^2(a+bx)\,dx &= \int \left(\frac{x^{1+m}}{2}-\frac{1}{2}x^{1+m}\cos(2a+2bx)\right)dx\\ &= \frac{x^{2+m}}{2(2+m)}-\frac{1}{2}\int x^{1+m}\cos(2a+2bx)\,dx\\ &= \frac{x^{2+m}}{2(2+m)}-\frac{1}{4}\int e^{-i(2a+2bx)}x^{1+m}\,dx-\frac{1}{4}\int e^{i(2a+2bx)}x^{1+m}\,dx\\ &= \frac{x^{2+m}}{2(2+m)}-\frac{2^{-4-m}e^{2ia}x^m(-ibx)^{-m}\Gamma(2+m,-2ibx)}{b^2}-\frac{2^{-4-m}e^{-2ia}x^m(ibx)^{-m}\Gamma(2+m,2ibx}{b^2}\end{aligned}$$

Mathematica [A] time = 0.33, size = 116, normalized size = 1.17

$$\frac{2^{-m-4}x^m\left(b^2x^2\right)^{-m}\left(-\left((m+2)(\cos(a)-i\sin(a))^2(-ibx)^m\Gamma(m+2,2ibx)\right)-(m+2)(\cos(a)+i\sin(a))^2(ibx)^m\Gamma(m}{b^2(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(1 + m)*Sin[a + b*x]^2,x]
```

```
[Out] (2^(-4 - m)*x^m*(2^(3 + m)*(b^2*x^2)^(1 + m) - (2 + m)*((-I)*b*x)^m*Gamma[2
 + m, (2*I)*b*x]*(Cos[a] - I*Sin[a])^2 - (2 + m)*(I*b*x)^m*Gamma[2 + m, (-2
*I)*b*x]*(Cos[a] + I*Sin[a])^2))/(b^2*(2 + m)*(b^2*x^2)^m)
```

fricas [A] time = 0.64, size = 77, normalized size = 0.78

$$\frac{4\,bxx^{m+1}+(-i\,m-2i)e^{\left(-(m+1)\log(2i\,b)-2i\,a\right)}\Gamma\left(m+2,2i\,bx\right)+(i\,m+2i)e^{\left(-(m+1)\log(-2i\,b)+2i\,a\right)}\Gamma\left(m+2,-2i\,bx\right)}{8\left(bm+2\,b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*(4*b*x*x^(m + 1) + (-I*m - 2*I)*e^(-(m + 1)*log(2*I*b) - 2*I*a)*gamma(m
 + 2, 2*I*b*x) + (I*m + 2*I)*e^(-(m + 1)*log(-2*I*b) + 2*I*a)*gamma(m + 2,
-2*I*b*x))/(b*m + 2*b)
```

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

$$\int x^{m+1}\sin\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^(m + 1)*sin(b*x + a)^2, x)
```

maple [F] time = 0.19, size = 0, normalized size = 0.00

$$\int x^{1+m} \left(\sin^2 (bx + a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1+m)*sin(b*x+a)^2,x)
```

```
[Out] int(x^(1+m)*sin(b*x+a)^2,x)
```

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

$$-\frac{(m+2) \int xx^m \cos (2\,bx + 2\,a)\ dx - e^{\left(m \log(x) + 2\,\log(x)\right)}}{2\,(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+m)*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*((m + 2)*integrate(x*x^m*cos(2*b*x + 2*a), x) - e^(m*log(x) + 2*log(x)
))/(m + 2)
```

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

$$\int x^{m+1} \sin (a + b\,x)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m + 1)*sin(a + b*x)^2,x)
```

```
[Out] int(x^(m + 1)*sin(a + b*x)^2, x)
```

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

$$\int x^{m+1} \sin^2 (a + bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1+m)*sin(b*x+a)**2,x)
```

```
[Out] Integral(x**(m + 1)*sin(a + b*x)**2, x)
```

3.87 $\int x^m \sin^2(a+bx)\,dx$

Optimal. Leaf size=103

$$\frac{ie^{2ia}2^{-m-3}x^m(-ibx)^{-m}\Gamma(m+1,-2ibx)}{b}-\frac{ie^{-2ia}2^{-m-3}x^m(ibx)^{-m}\Gamma(m+1,2ibx)}{b}+\frac{x^{m+1}}{2(m+1)}$$

```
[Out] 1/2*x^(1+m)/(1+m)+I*2^(-3-m)*exp(2*I*a)*x^m*GAMMA(1+m,-2*I*b*x)/b/((-I*b*x)
^m)-I*2^(-3-m)*x^m*GAMMA(1+m,2*I*b*x)/b/exp(2*I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.13, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3312, 3307, 2181}

$$\frac{ie^{2ia}2^{-m-3}x^m(-ibx)^{-m}\text{Gamma}(m+1,-2ibx)}{b}-\frac{ie^{-2ia}2^{-m-3}x^m(ibx)^{-m}\text{Gamma}(m+1,2ibx)}{b}+\frac{x^{m+1}}{2(m+1)}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*Sin[a + b*x]^2,x]
```

```
[Out] x^(1 + m)/(2*(1 + m)) + (I*2^(-3 - m)*E^((2*I)*a)*x^m*Gamma[1 + m, (-2*I)*b
*x])/(b*((-I)*b*x)^m) - (I*2^(-3 - m)*x^m*Gamma[1 + m, (2*I)*b*x])/(b*E^((2
*I)*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int x^m \sin^2(a+bx)\,dx = \int \left(\frac{x^m}{2}-\frac{1}{2}x^m\cos(2a+2bx)\right)dx$$
$$=\frac{x^{1+m}}{2(1+m)}-\frac{1}{2}\int x^m\cos(2a+2bx)\,dx$$
$$=\frac{x^{1+m}}{2(1+m)}-\frac{1}{4}\int e^{-i(2a+2bx)}x^m\,dx-\frac{1}{4}\int e^{i(2a+2bx)}x^m\,dx$$
$$=\frac{x^{1+m}}{2(1+m)}+\frac{i2^{-3-m}e^{2ia}x^m(-ibx)^{-m}\Gamma(1+m,-2ibx)}{b}-\frac{i2^{-3-m}e^{-2ia}x^m(ibx)^{-m}\Gamma(1+m,2ibx}{b}$$

Mathematica [A] time = 0.30, size = 120, normalized size = 1.17

$$\frac{2^{-m-3}x^m\left(b^2x^2\right)^{-m}\left(-i(m+1)(\cos(a)-i\sin(a))^2(-ibx)^m\Gamma(m+1,2ibx)+i(m+1)(\cos(a)+i\sin(a))^2(ibx)^m\Gamma(m\right.}{b(m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*Sin[a + b*x]^2,x]
```

```
[Out] (2^(-3 - m)*x^m*(2^(2 + m)*b*x*(b^2*x^2)^m - I*(1 + m)*((-I)*b*x)^m*Gamma[1
 + m, (2*I)*b*x]*(Cos[a] - I*Sin[a])^2 + I*(1 + m)*(I*b*x)^m*Gamma[1 + m, (
-2*I)*b*x]*(Cos[a] + I*Sin[a])^2))/(b*(1 + m)*(b^2*x^2)^m)
```

fricas [A] time = 0.68, size = 69, normalized size = 0.67

$$\frac{4\,bxx^m+(-i\,m-i)e^{\left(-m\log(2i\,b)-2i\,a\right)}\Gamma\left(m+1,2i\,bx\right)+(i\,m+i)e^{\left(-m\log(-2i\,b)+2i\,a\right)}\Gamma\left(m+1,-2i\,bx\right)}{8\,(bm+b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*(4*b*x*x^m + (-I*m - I)*e^(-m*log(2*I*b) - 2*I*a)*gamma(m + 1, 2*I*b*x)
 + (I*m + I)*e^(-m*log(-2*I*b) + 2*I*a)*gamma(m + 1, -2*I*b*x))/(b*m + b)
```

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

$$\int x^m \sin\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^m*sin(b*x + a)^2, x)
```

maple [F] time = 0.14, size = 0, normalized size = 0.00

$$\int x^{m} \left(\sin^{2}\left(bx + a\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*sin(b*x+a)^2,x)
```

```
[Out] int(x^m*sin(b*x+a)^2,x)
```

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

$$-\frac{(m+1)\int x^{m}\cos\left(2\,bx + 2\,a\right)\,dx - e^{\left(m\log(x)+\log(x)\right)}}{2\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*((m + 1)*integrate(x^m*cos(2*b*x + 2*a), x) - e^(m*log(x) + log(x)))/(
m + 1)
```

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

$$\int x^{m}\,\sin\left(a+b\,x\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*sin(a + b*x)^2,x)
```

```
[Out] int(x^m*sin(a + b*x)^2, x)
```

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

$$\int x^{m} \sin^{2}{\left(a + bx \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*sin(b*x+a)**2,x)
```

```
[Out] Integral(x**m*sin(a + b*x)**2, x)
```

3.88 $\int x^{-1+m} \sin^2(a+bx)\,dx$

Optimal. Leaf size=83

$$e^{2ia}2^{-m-2}x^m(-ibx)^{-m}\Gamma(m,-2ibx)+e^{-2ia}2^{-m-2}x^m(ibx)^{-m}\Gamma(m,2ibx)+\frac{x^m}{2m}$$

```
[Out] 1/2*x^m/m+2^(-2-m)*exp(2*I*a)*x^m*GAMMA(m,-2*I*b*x)/((-I*b*x)^m)+2^(-2-m)*x
^m*GAMMA(m,2*I*b*x)/exp(2*I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.13, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$e^{2ia}2^{-m-2}x^m(-ibx)^{-m}\text{Gamma}(m,-2ibx)+e^{-2ia}2^{-m-2}x^m(ibx)^{-m}\text{Gamma}(m,2ibx)+\frac{x^m}{2m}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-1 + m)*Sin[a + b*x]^2,x]
```

```
[Out] x^m/(2*m) + (2^(-2 - m)*E^((2*I)*a)*x^m*Gamma[m, (-2*I)*b*x])/((-I)*b*x)^m
+ (2^(-2 - m)*x^m*Gamma[m, (2*I)*b*x])/(E^((2*I)*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$
\begin{aligned}
\int x^{-1+m}\sin^2(a+bx)\,dx &= \int\left(\frac{x^{-1+m}}{2}-\frac{1}{2}x^{-1+m}\cos(2a+2bx)\right)dx\\
&= \frac{x^m}{2m}-\frac{1}{2}\int x^{-1+m}\cos(2a+2bx)\,dx\\
&= \frac{x^m}{2m}-\frac{1}{4}\int e^{-i(2a+2bx)}x^{-1+m}\,dx-\frac{1}{4}\int e^{i(2a+2bx)}x^{-1+m}\,dx\\
&= \frac{x^m}{2m}+2^{-2-m}e^{2ia}x^m(-ibx)^{-m}\Gamma(m,-2ibx)+2^{-2-m}e^{-2ia}x^m(ibx)^{-m}\Gamma(m,2ibx)
\end{aligned}
$$

Mathematica [A] time = 0.25, size = 99, normalized size = 1.19

$$
\frac{2^{-m-2}x^m\left(b^2x^2\right)^{-m}\left(m(\cos(a)-i\sin(a))^2(-ibx)^m\Gamma(m,2ibx)+m(\cos(a)+i\sin(a))^2(ibx)^m\Gamma(m,-2ibx)+2^{m+1}\left(b^2x\right.\right.}{m}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-1 + m)*Sin[a + b*x]^2,x]
```

```
[Out] (2^(-2 - m)*x^m*(2^(1 + m)*(b^2*x^2)^m + m*((-I)*b*x)^m*Gamma[m, (2*I)*b*x]
*(Cos[a] - I*Sin[a])^2 + m*(I*b*x)^m*Gamma[m, (-2*I)*b*x]*(Cos[a] + I*Sin[a
])^2))/(m*(b^2*x^2)^m)
```

fricas [A] time = 0.70, size = 64, normalized size = 0.77

$$
\frac{4\,bxx^{m-1}-i\,me^{\left(-(m-1)\log(2i\,b)-2i\,a\right)}\Gamma\left(m,2i\,bx\right)+i\,me^{\left(-(m-1)\log(-2i\,b)+2i\,a\right)}\Gamma\left(m,-2i\,bx\right)}{8\,bm}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*(4*b*x*x^(m - 1) - I*m*e^(-(m - 1)*log(2*I*b) - 2*I*a)*gamma(m, 2*I*b*x
) + I*m*e^(-(m - 1)*log(-2*I*b) + 2*I*a)*gamma(m, -2*I*b*x))/(b*m)
```

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

$$
\int x^{m-1}\sin\left(bx+a\right)^2\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^(m - 1)*sin(b*x + a)^2, x)
```

maple [F] time = 0.20, size = 0, normalized size = 0.00

$$\int x^{-1+m} \left(\sin^2 (bx + a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(-1+m)*sin(b*x+a)^2,x)
```

```
[Out] int(x^(-1+m)*sin(b*x+a)^2,x)
```

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

$$-\frac{m \int \frac{x^m \cos(2\,bx+2\,a)}{x}\,dx - x^m}{2\,m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+m)*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(m*integrate(x^m*cos(2*b*x + 2*a)/x, x) - x^m)/m
```

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

$$\int x^{m-1} \sin\left(a + b\,x\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 1)*sin(a + b*x)^2,x)
```

```
[Out] int(x^(m - 1)*sin(a + b*x)^2, x)
```

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

$$\int x^{m-1} \sin^2 (a + bx)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-1+m)*sin(b*x+a)**2,x)
```

```
[Out] Integral(x**(m - 1)*sin(a + b*x)**2, x)
```

3.89 $\int x^{-2+m}\sin^2(a+bx)\,dx$

Optimal. Leaf size=101

$$-ie^{2ia}b2^{-m-1}x^m(-ibx)^{-m}\Gamma(m-1,-2ibx)+ie^{-2ia}b2^{-m-1}x^m(ibx)^{-m}\Gamma(m-1,2ibx)-\frac{x^{m-1}}{2(1-m)}$$

```
[Out] -1/2*x^(-1+m)/(1-m)-I*2^(-1-m)*b*exp(2*I*a)*x^m*GAMMA(-1+m,-2*I*b*x)/((-I*b
*x)^m)+I*2^(-1-m)*b*x^m*GAMMA(-1+m,2*I*b*x)/exp(2*I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.14, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$-ie^{2ia}b2^{-m-1}x^m(-ibx)^{-m}\text{Gamma}(m-1,-2ibx)+ie^{-2ia}b2^{-m-1}x^m(ibx)^{-m}\text{Gamma}(m-1,2ibx)-\frac{x^{m-1}}{2(1-m)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-2 + m)*Sin[a + b*x]^2,x]
```

```
[Out] -x^(-1 + m)/(2*(1 - m)) - (I*2^(-1 - m)*b*E^((2*I)*a)*x^m*Gamma[-1 + m, (-2
*I)*b*x])/((-I)*b*x)^m + (I*2^(-1 - m)*b*x^m*Gamma[-1 + m, (2*I)*b*x])/(E^(
(2*I)*a)*(I*b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$
\begin{aligned}
\int x^{-2+m}\sin^2(a+bx)\,dx &= \int\left(\frac{x^{-2+m}}{2}-\frac{1}{2}x^{-2+m}\cos(2a+2bx)\right)dx\\
&= -\frac{x^{-1+m}}{2(1-m)}-\frac{1}{2}\int x^{-2+m}\cos(2a+2bx)\,dx\\
&= -\frac{x^{-1+m}}{2(1-m)}-\frac{1}{4}\int e^{-i(2a+2bx)}x^{-2+m}\,dx-\frac{1}{4}\int e^{i(2a+2bx)}x^{-2+m}\,dx\\
&= -\frac{x^{-1+m}}{2(1-m)}-i2^{-1-m}be^{2ia}x^m(-ibx)^{-m}\Gamma(-1+m,-2ibx)+i2^{-1-m}be^{-2ia}x^m(ibx)^{-m}\Gamma(-1
\end{aligned}
$$

Mathematica [A] time = 0.33, size = 117, normalized size = 1.16

$$
\frac{2^{-m-1}x^{m-1}\left(b^2x^2\right)^{-m}\left(b(m-1)x(\sin(2a)+i\cos(2a))(-ibx)^m\Gamma(m-1,2ibx)+b(m-1)x(\sin(2a)-i\cos(2a))(ibx)\right.}{m-1}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-2 + m)*Sin[a + b*x]^2,x]
```

```
[Out] (2^(-1 - m)*x^(-1 + m)*(2^m*(b^2*x^2)^m + b*(-1 + m)*x*(I*b*x)^m*Gamma[-1 +
 m, (-2*I)*b*x]*((-I)*Cos[2*a] + Sin[2*a]) + b*(-1 + m)*x*((-I)*b*x)^m*Gamm
a[-1 + m, (2*I)*b*x]*(I*Cos[2*a] + Sin[2*a])))/((-1 + m)*(b^2*x^2)^m)
```

fricas [A] time = 0.76, size = 77, normalized size = 0.76

$$
\frac{4\,bxx^{m-2}+(-i\,m+i)e^{\left(-(m-2)\log(2i\,b)-2i\,a\right)}\Gamma\left(m-1,2i\,bx\right)+(i\,m-i)e^{\left(-(m-2)\log(-2i\,b)+2i\,a\right)}\Gamma\left(m-1,-2i\,bx\right)}{8\left(bm-b\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*(4*b*x*x^(m - 2) + (-I*m + I)*e^(-(m - 2)*log(2*I*b) - 2*I*a)*gamma(m -
 1, 2*I*b*x) + (I*m - I)*e^(-(m - 2)*log(-2*I*b) + 2*I*a)*gamma(m - 1, -2*I
*b*x))/(b*m - b)
```

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

$$
\int x^{m-2}\sin\left(bx+a\right)^2\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sin(b*x+a)^2,x, algorithm="giac")
[Out] integrate(x^(m - 2)*sin(b*x + a)^2, x)
```

maple [F] time = 0.15, size = 0, normalized size = 0.00

$$\int x^{m-2} \left(\sin^2(bx+a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m-2)*sin(b*x+a)^2,x)
[Out] int(x^(m-2)*sin(b*x+a)^2,x)
```

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

$$-\frac{(m-1)x\int \frac{x^m\cos(2\,bx+2\,a)}{x^2}\,dx - x^m}{2\,(m-1)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-2+m)*sin(b*x+a)^2,x, algorithm="maxima")
[Out] -1/2*((m - 1)*x*integrate(x^m*cos(2*b*x + 2*a)/x^2, x) - x^m)/((m - 1)*x)
```

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

$$\int x^{m-2}\sin(a+b\,x)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 2)*sin(a + b*x)^2,x)
[Out] int(x^(m - 2)*sin(a + b*x)^2, x)
```

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

$$\int x^{m-2}\sin^2(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-2+m)*sin(b*x+a)**2,x)
[Out] Integral(x**(m - 2)*sin(a + b*x)**2, x)
```

3.90 $\int x^{-3+m} \sin^2(a+bx)\,dx$

Optimal. Leaf size=97

$$-e^{2ia}b^2 2^{-m}x^m(-ibx)^{-m}\Gamma(m-2,-2ibx)-e^{-2ia}b^2 2^{-m}x^m(ibx)^{-m}\Gamma(m-2,2ibx)-\frac{x^{m-2}}{2(2-m)}$$

```
[Out] -1/2*x^(-2+m)/(2-m)-b^2*exp(2*I*a)*x^m*GAMMA(-2+m,-2*I*b*x)/(2^m)/((-I*b*x)
^m)-b^2*x^m*GAMMA(-2+m,2*I*b*x)/(2^m)/exp(2*I*a)/((I*b*x)^m)
```

Rubi [A] time = 0.17, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {3312, 3307, 2181}

$$-e^{2ia}b^2 2^{-m}x^m(-ibx)^{-m}\text{Gamma}(m-2,-2ibx)-e^{-2ia}b^2 2^{-m}x^m(ibx)^{-m}\text{Gamma}(m-2,2ibx)-\frac{x^{m-2}}{2(2-m)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-3 + m)*Sin[a + b*x]^2,x]
```

```
[Out] -x^(-2 + m)/(2*(2 - m)) - (b^2*E^((2*I)*a)*x^m*Gamma[-2 + m, (-2*I)*b*x])/(
2^m*((-I)*b*x)^m) - (b^2*x^m*Gamma[-2 + m, (2*I)*b*x])/(2^m*E^((2*I)*a)*(I*
b*x)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rubi steps

$$\int x^{-3+m}\sin^2(a+bx)\,dx = \int\left(\frac{x^{-3+m}}{2}-\frac{1}{2}x^{-3+m}\cos(2a+2bx)\right)dx$$
$$= -\frac{x^{-2+m}}{2(2-m)}-\frac{1}{2}\int x^{-3+m}\cos(2a+2bx)\,dx$$
$$= -\frac{x^{-2+m}}{2(2-m)}-\frac{1}{4}\int e^{-i(2a+2bx)}x^{-3+m}\,dx-\frac{1}{4}\int e^{i(2a+2bx)}x^{-3+m}\,dx$$
$$= -\frac{x^{-2+m}}{2(2-m)}-2^{-m}b^2e^{2ia}x^m(-ibx)^{-m}\Gamma(-2+m,-2ibx)-2^{-m}b^2e^{-2ia}x^m(ibx)^{-m}\Gamma(-2+m,$$

Mathematica [A] time = 0.44, size = 121, normalized size = 1.25

$$\frac{2^{-m-1}x^{m-2}\left(b^2x^2\right)^{-m}\left(-2b^2(m-2)x^2(\cos(a)-i\sin(a))^2(-ibx)^m\Gamma(m-2,2ibx)+2(m-2)(\cos(2a)+i\sin(2a))(ibx\right.}{m-2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-3 + m)*Sin[a + b*x]^2,x]
```

```
[Out] (2^(-1 - m)*x^(-2 + m)*(2^m*(b^2*x^2)^m - 2*b^2*(-2 + m)*x^2*((-I)*b*x)^m*G
amma[-2 + m, (2*I)*b*x]*(Cos[a] - I*Sin[a])^2 + 2*(-2 + m)*(I*b*x)^(2 + m)*
Gamma[-2 + m, (-2*I)*b*x]*(Cos[2*a] + I*Sin[2*a])))/((-2 + m)*(b^2*x^2)^m)
```

fricas [A] time = 0.80, size = 77, normalized size = 0.79

$$\frac{4\,bxx^{m-3}+(-i\,m+2i)e^{\left(-(m-3)\log(2i\,b)-2i\,a\right)}\Gamma\left(m-2,2i\,bx\right)+(i\,m-2i)e^{\left(-(m-3)\log(-2i\,b)+2i\,a\right)}\Gamma\left(m-2,-2i\,bx\right)}{8\,(bm-2\,b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sin(b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*(4*b*x*x^(m - 3) + (-I*m + 2*I)*e^(-(m - 3)*log(2*I*b) - 2*I*a)*gamma(m
 - 2, 2*I*b*x) + (I*m - 2*I)*e^(-(m - 3)*log(-2*I*b) + 2*I*a)*gamma(m - 2,
-2*I*b*x))/(b*m - 2*b)
```

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

$$\int x^{m-3}\sin\left(bx+a\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sin(b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^(m - 3)*sin(b*x + a)^2, x)
```

maple [F] time = 0.16, size = 0, normalized size = 0.00

$$\int x^{m-3} \left(\sin^2 (bx + a)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m-3)*sin(b*x+a)^2,x)
```

```
[Out] int(x^(m-3)*sin(b*x+a)^2,x)
```

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

$$-\frac{(m-2)x^2 \int \frac{x^m \cos(2\,bx+2\,a)}{x^3}\,dx - x^m}{2\,(m-2)x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3+m)*sin(b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*((m - 2)*x^2*integrate(x^m*cos(2*b*x + 2*a)/x^3, x) - x^m)/((m - 2)*x^
2)
```

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

$$\int x^{m-3} \sin\left(a + b\,x\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(m - 3)*sin(a + b*x)^2,x)
```

```
[Out] int(x^(m - 3)*sin(a + b*x)^2, x)
```

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

$$\int x^{m-3} \sin^2 (a + bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-3+m)*sin(b*x+a)**2,x)
```

```
[Out] Integral(x**(m - 3)*sin(a + b*x)**2, x)
```

3.91 $\int \left(\frac{x}{\csc^{\frac{3}{2}}(e+fx)}-\frac{1}{3}x\sqrt{\csc(e+fx)}\right)dx$

Optimal. Leaf size=42

$$\frac{4}{9f^2\csc^{\frac{3}{2}}(e+fx)}-\frac{2x\cos(e+fx)}{3f\sqrt{\csc(e+fx)}}$$

```
[Out] 4/9/f^2/csc(f*x+e)^(3/2)-2/3*x*cos(f*x+e)/f/csc(f*x+e)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {4187, 4189}

$$\frac{4}{9f^2\csc^{\frac{3}{2}}(e+fx)}-\frac{2x\cos(e+fx)}{3f\sqrt{\csc(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[x/Csc[e + f*x]^(3/2) - (x*Sqrt[Csc[e + f*x]])/3,x]
```

```
[Out] 4/(9*f^2*Csc[e + f*x]^(3/2)) - (2*x*Cos[e + f*x])/(3*f*Sqrt[Csc[e + f*x]])
```

Rule 4187

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 Simp[(d*(b*Csc[e + f*x])^n)/(f^2*n^2), x] + (Dist[(n + 1)/(b^2*n), Int[(c
+ d*x)*(b*Csc[e + f*x])^(n + 2), x], x] + Simp[((c + d*x)*Cos[e + f*x]*(b*C
sc[e + f*x])^(n + 1))/(b*f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && LtQ[n, -
1]
```

Rule 4189

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_.), x_Symb
ol] :> Dist[(b*Sin[e + f*x])^n*(b*Csc[e + f*x])^n, Int[(c + d*x)^m/(b*Sin[e
 + f*x])^n, x], x] /; FreeQ[{b, c, d, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \left(\frac{x}{\csc^{\frac{3}{2}}(e+fx)} - \frac{1}{3}x\sqrt{\csc(e+fx)} \right) dx = -\left(\frac{1}{3}\int x\sqrt{\csc(e+fx)}\,dx \right) + \int \frac{x}{\csc^{\frac{3}{2}}(e+fx)}\,dx$$
$$= \frac{4}{9f^2\csc^{\frac{3}{2}}(e+fx)} - \frac{2x\cos(e+fx)}{3f\sqrt{\csc(e+fx)}} + \frac{1}{3}\int x\sqrt{\csc(e+fx)}\,dx - \frac{1}{3}$$
$$= \frac{4}{9f^2\csc^{\frac{3}{2}}(e+fx)} - \frac{2x\cos(e+fx)}{3f\sqrt{\csc(e+fx)}}$$

Mathematica [A] time = 0.55, size = 29, normalized size = 0.69

$$-\frac{2(3fx\cot(e+fx)-2)}{9f^2\csc^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Csc[e + f*x]^(3/2) - (x*Sqrt[Csc[e + f*x]])/3,x]
[Out] (-2*(-2 + 3*f*x*Cot[e + f*x]))/(9*f^2*Csc[e + f*x]^(3/2))
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)^(3/2)-1/3*x*csc(f*x+e)^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int -\frac{1}{3}x\sqrt{\csc\left(fx+e\right)} + \frac{x}{\csc\left(fx+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)^(3/2)-1/3*x*csc(f*x+e)^(1/2),x, algorithm="giac")
[Out] integrate(-1/3*x*sqrt(csc(f*x + e)) + x/csc(f*x + e)^(3/2), x)
```

maple [F] time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{x}{\csc\left(fx+e\right)^{\frac{3}{2}}}-\frac{x\left(\sqrt{\csc}\,\left(fx+e\right)\right)}{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/csc(f*x+e)^(3/2)-1/3*x*csc(f*x+e)^(1/2),x)
[Out] int(x/csc(f*x+e)^(3/2)-1/3*x*csc(f*x+e)^(1/2),x)
```

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

$$\int -\frac{1}{3}\,x\sqrt{\csc\left(fx+e\right)}+\frac{x}{\csc\left(fx+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)^(3/2)-1/3*x*csc(f*x+e)^(1/2),x, algorithm="maxima")
[Out] integrate(-1/3*x*sqrt(csc(f*x + e)) + x/csc(f*x + e)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{x}{\left(\frac{1}{\sin\left(e+f\,x\right)}\right)^{3/2}}-\frac{x\,\sqrt{\frac{1}{\sin\left(e+f\,x\right)}}}{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(1/sin(e + f*x))^(3/2) - (x*(1/sin(e + f*x))^(1/2))/3,x)
[Out] int(x/(1/sin(e + f*x))^(3/2) - (x*(1/sin(e + f*x))^(1/2))/3, x)
```

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

$$-\frac{\int \left(-\frac{3x}{\csc^{\frac{3}{2}}\left(e+fx\right)}\right)dx+\int x\sqrt{\csc\left(e+fx\right)}\,dx}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)**(3/2)-1/3*x*csc(f*x+e)**(1/2),x)
[Out] -(Integral(-3*x/csc(e + f*x)**(3/2), x) + Integral(x*sqrt(csc(e + f*x)), x)
)/3
```

3.92 $\int \left(\frac{x^2}{\csc^{\frac{3}{2}}(e+fx)} - \frac{1}{3}x^2\sqrt{\csc(e+fx)} \right) dx$

Optimal. Leaf size=111

$$\frac{16\cos(e+fx)}{27f^3\sqrt{\csc(e+fx)}} - \frac{16\sqrt{\sin(e+fx)}\sqrt{\csc(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)}{27f^3} + \frac{8x}{9f^2\csc^{\frac{3}{2}}(e+fx)} - \frac{2x^2\cos(e+fx)}{3f\sqrt{\csc(e+fx)}}$$

```
[Out] 8/9*x/f^2/csc(f*x+e)^(3/2)+16/27*cos(f*x+e)/f^3/csc(f*x+e)^(1/2)-2/3*x^2*co
s(f*x+e)/f/csc(f*x+e)^(1/2)+16/27*(sin(1/2*e+1/4*Pi+1/2*f*x)^2)^(1/2)/sin(1
/2*e+1/4*Pi+1/2*f*x)*EllipticF(cos(1/2*e+1/4*Pi+1/2*f*x),2^(1/2))*csc(f*x+e
)^(1/2)*sin(f*x+e)^(1/2)/f^3
```

Rubi [A] time = 0.21, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.156, Rules used = {4188, 4189, 3769, 3771, 2641}

$$\frac{8x}{9f^2\csc^{\frac{3}{2}}(e+fx)} + \frac{16\cos(e+fx)}{27f^3\sqrt{\csc(e+fx)}} - \frac{16\sqrt{\sin(e+fx)}\sqrt{\csc(e+fx)}\,F\left(\frac{1}{2}\left(e+fx-\frac{\pi}{2}\right)\middle|2\right)}{27f^3} - \frac{2x^2\cos(e+fx)}{3f\sqrt{\csc(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/Csc[e + f*x]^(3/2) - (x^2*Sqrt[Csc[e + f*x]])/3,x]
```

```
[Out] (8*x)/(9*f^2*Csc[e + f*x]^(3/2)) + (16*Cos[e + f*x])/(27*f^3*Sqrt[Csc[e + f
*x]]) - (2*x^2*Cos[e + f*x])/(3*f*Sqrt[Csc[e + f*x]]) - (16*Sqrt[Csc[e + f*
x]]*EllipticF[(e - Pi/2 + f*x)/2, 2]*Sqrt[Sin[e + f*x]])/(27*f^3)
```

Rule 2641

```
Int[1/Sqrt[sin[(c_.) + (d_.)*(x_)]], x_Symbol] :> Simp[(2*EllipticF[(1*(c -
 Pi/2 + d*x))/2, 2])/d, x] /; FreeQ[{c, d}, x]
```

Rule 3769

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

Rule 3771

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> Dist[(b*Csc[c + d*x]
)^n*Sin[c + d*x]^n, Int[1/Sin[c + d*x]^n, x], x] /; FreeQ[{b, c, d}, x] &&
EqQ[n^2, 1/4]
```

Rule 4188

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Csc[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(n + 1)/(b^2*n), Int[(c + d*x)^m*(b*Csc[e + f*x])^(n + 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Csc[e + f*x])^n, x], x]
+ Simp[((c + d*x)^m*Cos[e + f*x]*(b*Csc[e + f*x])^(n + 1))/(b*f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && LtQ[n, -1] && GtQ[m, 1]
```

Rule 4189

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_.), x_Symb
ol] :> Dist[(b*Sin[e + f*x])^n*(b*Csc[e + f*x])^n, Int[(c + d*x)^m/(b*Sin[e
 + f*x])^n, x], x] /; FreeQ[{b, c, d, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \left(\frac{x^2}{\csc^{\frac{3}{2}}(e+fx)}-\frac{1}{3}x^2\sqrt{\csc(e+fx)}\right)dx=-\left(\frac{1}{3}\int x^2\sqrt{\csc(e+fx)}\,dx\right)+\int \frac{x^2}{\csc^{\frac{3}{2}}(e+fx)}\,dx$$

$$=\frac{8x}{9f^2\csc^{\frac{3}{2}}(e+fx)}-\frac{2x^2\cos(e+fx)}{3f\sqrt{\csc(e+fx)}}+\frac{1}{3}\int x^2\sqrt{\csc(e+fx)}\,dx-\frac{8}{}$$

$$=\frac{8x}{9f^2\csc^{\frac{3}{2}}(e+fx)}+\frac{16\cos(e+fx)}{27f^3\sqrt{\csc(e+fx)}}-\frac{2x^2\cos(e+fx)}{3f\sqrt{\csc(e+fx)}}-\frac{8\int\sqrt{c}}{}$$

$$=\frac{8x}{9f^2\csc^{\frac{3}{2}}(e+fx)}+\frac{16\cos(e+fx)}{27f^3\sqrt{\csc(e+fx)}}-\frac{2x^2\cos(e+fx)}{3f\sqrt{\csc(e+fx)}}-\frac{\left(8\sqrt{cs}\right.}{}$$

$$=\frac{8x}{9f^2\csc^{\frac{3}{2}}(e+fx)}+\frac{16\cos(e+fx)}{27f^3\sqrt{\csc(e+fx)}}-\frac{2x^2\cos(e+fx)}{3f\sqrt{\csc(e+fx)}}-\frac{16\sqrt{cs}}{}$$

Mathematica [A] time = 0.59, size = 87, normalized size = 0.78

$$-\frac{\sqrt{\csc(e+fx)}\left(9f^2x^2\sin(2(e+fx))-8\sin(2(e+fx))+12fx\cos(2(e+fx))-16\sqrt{\sin(e+fx)}F\left(\frac{1}{4}(-2e-2f\right.\right.}{27f^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/Csc[e + f*x]^(3/2) - (x^2*Sqrt[Csc[e + f*x]])/3,x]
```

```
[Out] -1/27*(Sqrt[Csc[e + f*x]]*(-12*f*x + 12*f*x*Cos[2*(e + f*x)] - 16*EllipticF
[(-2*e + Pi - 2*f*x)/4, 2]*Sqrt[Sin[e + f*x]] - 8*Sin[2*(e + f*x)] + 9*f^2*
x^2*Sin[2*(e + f*x)]))/f^3
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/csc(f*x+e)^(3/2)-1/3*x^2*csc(f*x+e)^(1/2),x, algorithm="frica
s")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int -\frac{1}{3}\,x^2\sqrt{\csc\left(fx+e\right)}+\frac{x^2}{\csc\left(fx+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/csc(f*x+e)^(3/2)-1/3*x^2*csc(f*x+e)^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate(-1/3*x^2*sqrt(csc(f*x + e)) + x^2/csc(f*x + e)^(3/2), x)
```

maple [F] time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\csc\left(fx+e\right)^{\frac{3}{2}}}-\frac{x^2\left(\sqrt{\csc}\,\left(fx+e\right)\right)}{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/csc(f*x+e)^(3/2)-1/3*x^2*csc(f*x+e)^(1/2),x)
```

[Out] int(x^2/csc(f*x+e)^(3/2)-1/3*x^2*csc(f*x+e)^(1/2),x)

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

$$\int -\frac{1}{3}x^2\sqrt{\csc\left(fx+e\right)} + \frac{x^2}{\csc\left(fx+e\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x^2/csc(f*x+e)^(3/2)-1/3*x^2*csc(f*x+e)^(1/2),x, algorithm="maxim a")

[Out] integrate(-1/3*x^2*sqrt(csc(f*x + e)) + x^2/csc(f*x + e)^(3/2), x)

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

$$\int \frac{x^2}{{\left(\frac{1}{\sin\left(e+f\,x\right)}\right)}^{3/2}}-\frac{x^2\,\sqrt{\frac{1}{\sin\left(e+f\,x\right)}}}{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x^2/(1/sin(e + f*x))^(3/2) - (x^2*(1/sin(e + f*x))^(1/2))/3,x)

[Out] int(x^2/(1/sin(e + f*x))^(3/2) - (x^2*(1/sin(e + f*x))^(1/2))/3, x)

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

$$-\frac{\int \left(-\frac{3x^2}{\csc^{\frac{3}{2}}\left(e+fx\right)}\right)dx + \int x^2\sqrt{\csc\left(e+fx\right)}\,dx}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(x**2/csc(f*x+e)**(3/2)-1/3*x**2*csc(f*x+e)**(1/2),x)

[Out] -(Integral(-3*x**2/csc(e + f*x)**(3/2), x) + Integral(x**2*sqrt(csc(e + f*x)), x))/3

3.93 $\int \left(\frac{x}{\csc^{\frac{5}{2}}(e+fx)}-\frac{3x}{5\sqrt{\csc(e+fx)}}\right) dx$

Optimal. Leaf size=42

$$\frac{4}{25f^2\csc^{\frac{5}{2}}(e+fx)}-\frac{2x\cos(e+fx)}{5f\csc^{\frac{3}{2}}(e+fx)}$$

```
[Out] 4/25/f^2/csc(f*x+e)^(5/2)-2/5*x*cos(f*x+e)/f/csc(f*x+e)^(3/2)
```

Rubi [A] time = 0.11, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {4187, 4189}

$$\frac{4}{25f^2\csc^{\frac{5}{2}}(e+fx)}-\frac{2x\cos(e+fx)}{5f\csc^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Int[x/Csc[e + f*x]^(5/2) - (3*x)/(5*Sqrt[Csc[e + f*x]]),x]
```

```
[Out] 4/(25*f^2*Csc[e + f*x]^(5/2)) - (2*x*Cos[e + f*x])/(5*f*Csc[e + f*x]^(3/2))
```

Rule 4187

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 Simp[(d*(b*Csc[e + f*x])^n)/(f^2*n^2), x] + (Dist[(n + 1)/(b^2*n), Int[(c
+ d*x)*(b*Csc[e + f*x])^(n + 2), x], x] + Simp[((c + d*x)*Cos[e + f*x]*(b*C
sc[e + f*x])^(n + 1))/(b*f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && LtQ[n, -
1]
```

Rule 4189

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_.), x_Symb
ol] :> Dist[(b*Sin[e + f*x])^n*(b*Csc[e + f*x])^n, Int[(c + d*x)^m/(b*Sin[e
 + f*x])^n, x], x] /; FreeQ[{b, c, d, e, f, m, n}, x] && !IntegerQ[n]
```

Rubi steps

$$\int \left(\frac{x}{\csc^{\frac{5}{2}}(e+fx)}-\frac{3x}{5\sqrt{\csc(e+fx)}}\right)dx=-\left(\frac{3}{5}\int \frac{x}{\sqrt{\csc(e+fx)}}\,dx\right)+\int \frac{x}{\csc^{\frac{5}{2}}(e+fx)}\,dx$$
$$=\frac{4}{25f^2\csc^{\frac{5}{2}}(e+fx)}-\frac{2x\cos(e+fx)}{5f\csc^{\frac{3}{2}}(e+fx)}+\frac{3}{5}\int \frac{x}{\sqrt{\csc(e+fx)}}\,dx-\frac{1}{5}\Big(3$$
$$=\frac{4}{25f^2\csc^{\frac{5}{2}}(e+fx)}-\frac{2x\cos(e+fx)}{5f\csc^{\frac{3}{2}}(e+fx)}$$

Mathematica [**A**] time = 0.50, size = 29, normalized size = 0.69

$$-\frac{2(5fx\cot(e+fx)-2)}{25f^2\csc^{\frac{5}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Csc[e + f*x]^(5/2) - (3*x)/(5*Sqrt[Csc[e + f*x]]),x]
[Out] (-2*(-2 + 5*f*x*Cot[e + f*x]))/(25*f^2*Csc[e + f*x]^(5/2))
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)^(5/2)-3/5*x/csc(f*x+e)^(1/2),x, algorithm="fricas")
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int -\frac{3\,x}{5\,\sqrt{\csc\left(fx+e\right)}}+\frac{x}{\csc\left(fx+e\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)^(5/2)-3/5*x/csc(f*x+e)^(1/2),x, algorithm="giac")
[Out] integrate(-3/5*x/sqrt(csc(f*x + e)) + x/csc(f*x + e)^(5/2), x)
```

maple [F] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{x}{\csc\left(fx+e\right)^{\frac{5}{2}}}-\frac{3x}{5\sqrt{\csc\left(fx+e\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/csc(f*x+e)^(5/2)-3/5*x/csc(f*x+e)^(1/2),x)
```

```
[Out] int(x/csc(f*x+e)^(5/2)-3/5*x/csc(f*x+e)^(1/2),x)
```

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

$$\int -\frac{3\,x}{5\,\sqrt{\csc\left(fx+e\right)}}+\frac{x}{\csc\left(fx+e\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)^(5/2)-3/5*x/csc(f*x+e)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(-3/5*x/sqrt(csc(f*x + e)) + x/csc(f*x + e)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{x}{{\left(\frac{1}{\sin\left(e+f\,x\right)}\right)}^{5/2}}-\frac{3\,x}{5\,\sqrt{\frac{1}{\sin\left(e+f\,x\right)}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(1/sin(e + f*x))^(5/2) - (3*x)/(5*(1/sin(e + f*x))^(1/2)),x)
```

```
[Out] int(x/(1/sin(e + f*x))^(5/2) - (3*x)/(5*(1/sin(e + f*x))^(1/2)), x)
```

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

$$-\frac{\int\left(-\frac{5x}{\csc^{\frac{5}{2}}\left(e+fx\right)}\right)dx+\int\frac{3x}{\sqrt{\csc\left(e+fx\right)}}\,dx}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)**(5/2)-3/5*x/csc(f*x+e)**(1/2),x)
```

```
[Out] -(Integral(-5*x/csc(e + f*x)**(5/2), x) + Integral(3*x/sqrt(csc(e + f*x)),
x))/5
```

3.94 $\int \left(\frac{x}{\csc^{\frac{7}{2}}(e+fx)}-\frac{5}{21}x\sqrt{\csc(e+fx)}\right)dx$

Optimal. Leaf size=83

$$\frac{20}{63f^2\csc^{\frac{3}{2}}(e+fx)}+\frac{4}{49f^2\csc^{\frac{7}{2}}(e+fx)}-\frac{2x\cos(e+fx)}{7f\csc^{\frac{5}{2}}(e+fx)}-\frac{10x\cos(e+fx)}{21f\sqrt{\csc(e+fx)}}$$

```
[Out] 4/49/f^2/csc(f*x+e)^(7/2)-2/7*x*cos(f*x+e)/f/csc(f*x+e)^(5/2)+20/63/f^2/csc
(f*x+e)^(3/2)-10/21*x*cos(f*x+e)/f/csc(f*x+e)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {4187, 4189}

$$\frac{20}{63f^2\csc^{\frac{3}{2}}(e+fx)}+\frac{4}{49f^2\csc^{\frac{7}{2}}(e+fx)}-\frac{2x\cos(e+fx)}{7f\csc^{\frac{5}{2}}(e+fx)}-\frac{10x\cos(e+fx)}{21f\sqrt{\csc(e+fx)}}$$

Antiderivative was successfully verified.

```
[In] Int[x/Csc[e + f*x]^(7/2) - (5*x*Sqrt[Csc[e + f*x]])/21,x]
```

```
[Out] 4/(49*f^2*Csc[e + f*x]^(7/2)) - (2*x*Cos[e + f*x])/(7*f*Csc[e + f*x]^(5/2))
 + 20/(63*f^2*Csc[e + f*x]^(3/2)) - (10*x*Cos[e + f*x])/(21*f*Sqrt[Csc[e +
f*x]])
```

Rule 4187

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 Simp[(d*(b*Csc[e + f*x])^n)/(f^2*n^2), x] + (Dist[(n + 1)/(b^2*n), Int[(c
+ d*x)*(b*Csc[e + f*x])^(n + 2), x], x] + Simp[((c + d*x)*Cos[e + f*x]*(b*C
sc[e + f*x])^(n + 1))/(b*f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && LtQ[n, -
1]
```

Rule 4189

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_.), x_Symb
ol] :> Dist[(b*Sin[e + f*x])^n*(b*Csc[e + f*x])^n, Int[(c + d*x)^m/(b*Sin[e
 + f*x])^n, x], x] /; FreeQ[{b, c, d, e, f, m, n}, x] &&  !IntegerQ[n]
```

Rubi steps

$$\int \left(\frac{x}{\csc^{\frac{7}{2}}(e+fx)} - \frac{5}{21}x\sqrt{\csc(e+fx)}\right)dx = -\left(\frac{5}{21}\int x\sqrt{\csc(e+fx)}\,dx\right) + \int \frac{x}{\csc^{\frac{7}{2}}(e+fx)}\,dx$$
$$= \frac{4}{49f^2\csc^{\frac{7}{2}}(e+fx)} - \frac{2x\cos(e+fx)}{7f\csc^{\frac{5}{2}}(e+fx)} + \frac{5}{7}\int \frac{x}{\csc^{\frac{3}{2}}(e+fx)}\,dx - \frac{1}{21}$$
$$= \frac{4}{49f^2\csc^{\frac{7}{2}}(e+fx)} - \frac{2x\cos(e+fx)}{7f\csc^{\frac{5}{2}}(e+fx)} + \frac{20}{63f^2\csc^{\frac{3}{2}}(e+fx)} - \frac{10x}{21f}$$
$$= \frac{4}{49f^2\csc^{\frac{7}{2}}(e+fx)} - \frac{2x\cos(e+fx)}{7f\csc^{\frac{5}{2}}(e+fx)} + \frac{20}{63f^2\csc^{\frac{3}{2}}(e+fx)} - \frac{10x}{21f}$$

Mathematica [A] time = 2.40, size = 57, normalized size = 0.69

$$\frac{-36\cos(2(e+fx)) - 483fx\cot(e+fx) + 63fx\cos(3(e+fx))\csc(e+fx) + 316}{882f^2\csc^{\frac{3}{2}}(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Csc[e + f*x]^(7/2) - (5*x*Sqrt[Csc[e + f*x]])/21,x]
```

```
[Out] (316 - 36*Cos[2*(e + f*x)] - 483*f*x*Cot[e + f*x] + 63*f*x*Cos[3*(e + f*x)]
*Csc[e + f*x])/(882*f^2*Csc[e + f*x]^(3/2))
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)^(7/2)-5/21*x*csc(f*x+e)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

$$\int -\frac{5}{21}x\sqrt{\csc\left(fx+e\right)} + \frac{x}{\csc\left(fx+e\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)^(7/2)-5/21*x*csc(f*x+e)^(1/2),x, algorithm="giac")
[Out] integrate(-5/21*x*sqrt(csc(f*x + e)) + x/csc(f*x + e)^(7/2), x)
```

maple [F] time = 0.23, size = 0, normalized size = 0.00

$$\int \frac{x}{\csc \left(f x+e\right)^{\frac{7}{2}}}-\frac{5 x \left(\sqrt{\csc}\left(f x+e\right)\right)}{21}d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/csc(f*x+e)^(7/2)-5/21*x*csc(f*x+e)^(1/2),x)
[Out] int(x/csc(f*x+e)^(7/2)-5/21*x*csc(f*x+e)^(1/2),x)
```

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

$$\int -\frac{5}{21} \, x \sqrt{\csc\left(f x + e\right)} + \frac{x}{\csc\left(f x + e\right)^{\frac{7}{2}}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)^(7/2)-5/21*x*csc(f*x+e)^(1/2),x, algorithm="maxima")
[Out] integrate(-5/21*x*sqrt(csc(f*x + e)) + x/csc(f*x + e)^(7/2), x)
```

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

$$\int \frac{x}{{\left(\frac{1}{\sin\left(e+f\,x\right)}\right)}^{7/2}}-\frac{5\,x\,\sqrt{\frac{1}{\sin\left(e+f\,x\right)}}}{21} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(1/sin(e + f*x))^(7/2) - (5*x*(1/sin(e + f*x))^(1/2))/21,x)
[Out] int(x/(1/sin(e + f*x))^(7/2) - (5*x*(1/sin(e + f*x))^(1/2))/21, x)
```

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

$$- \frac{\int \left(- \frac{21 x}{\csc^{\frac{7}{2}}{\left(e + f x \right)}}\right)\, dx + \int 5 x \sqrt{\csc{\left(e + f x \right)}}\, dx}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/csc(f*x+e)**(7/2)-5/21*x*csc(f*x+e)**(1/2),x)
```

```
[Out] -(Integral(-21*x/csc(e + f*x)**(7/2), x) + Integral(5*x*sqrt(csc(e + f*x)),
 x))/21
```

3.95 $\int (c+dx)^3(a+a\sin(e+fx))\,dx$

Optimal. Leaf size=90

$$\frac{6ad^2(c+dx)\cos(e+fx)}{f^3}+\frac{3ad(c+dx)^2\sin(e+fx)}{f^2}-\frac{a(c+dx)^3\cos(e+fx)}{f}+\frac{a(c+dx)^4}{4d}-\frac{6ad^3\sin(e+fx)}{f^4}$$

```
[Out] 1/4*a*(d*x+c)^4/d+6*a*d^2*(d*x+c)*cos(f*x+e)/f^3-a*(d*x+c)^3*cos(f*x+e)/f-6
*a*d^3*sin(f*x+e)/f^4+3*a*d*(d*x+c)^2*sin(f*x+e)/f^2
```

Rubi [A] time = 0.12, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3317, 3296, 2637}

$$\frac{6ad^2(c+dx)\cos(e+fx)}{f^3}+\frac{3ad(c+dx)^2\sin(e+fx)}{f^2}-\frac{a(c+dx)^3\cos(e+fx)}{f}+\frac{a(c+dx)^4}{4d}-\frac{6ad^3\sin(e+fx)}{f^4}$$

Antiderivative was successfully verified.

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

```
[Out] (a*(c + d*x)^4)/(4*d) + (6*a*d^2*(c + d*x)*Cos[e + f*x])/f^3 - (a*(c + d*x)
^3*Cos[e + f*x])/f - (6*a*d^3*Sin[e + f*x])/f^4 + (3*a*d*(c + d*x)^2*Sin[e
+ f*x])/f^2
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

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

Rubi steps

$$\int (c+dx)^3(a+a\sin(e+fx))\,dx = \int \left(a(c+dx)^3 + a(c+dx)^3\sin(e+fx)\right)\,dx$$
$$= \frac{a(c+dx)^4}{4d} + a\int (c+dx)^3\sin(e+fx)\,dx$$
$$= \frac{a(c+dx)^4}{4d} - \frac{a(c+dx)^3\cos(e+fx)}{f} + \frac{(3ad)\int (c+dx)^2\cos(e+fx)\,dx}{f}$$
$$= \frac{a(c+dx)^4}{4d} - \frac{a(c+dx)^3\cos(e+fx)}{f} + \frac{3ad(c+dx)^2\sin(e+fx)}{f^2} - \frac{\left(6ad^2\right)\int$$
$$= \frac{a(c+dx)^4}{4d} + \frac{6ad^2(c+dx)\cos(e+fx)}{f^3} - \frac{a(c+dx)^3\cos(e+fx)}{f} + \frac{3ad(c+$$
$$= \frac{a(c+dx)^4}{4d} + \frac{6ad^2(c+dx)\cos(e+fx)}{f^3} - \frac{a(c+dx)^3\cos(e+fx)}{f} - \frac{6ad^3\sin$$

Mathematica [A] time = 0.93, size = 123, normalized size = 1.37

$$a\left(\frac{3d\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2-2\right)\right)\sin(e+fx)}{f^4} - \frac{(c+dx)\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2-6\right)\right)\cos(e+fx)}{f^3} + \frac{1}{4}x$$

Antiderivative was successfully verified.

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

```
[Out] a*((x*(4*c^3 + 6*c^2*d*x + 4*c*d^2*x^2 + d^3*x^3))/4 - ((c + d*x)*(c^2*f^2
+ 2*c*d*f^2*x + d^2*(-6 + f^2*x^2))*Cos[e + f*x])/f^3 + (3*d*(c^2*f^2 + 2*c
*d*f^2*x + d^2*(-2 + f^2*x^2))*Sin[e + f*x])/f^4)
```

fricas [A] time = 0.67, size = 168, normalized size = 1.87

$$\frac{ad^3f^4x^4 + 4\,acd^2f^4x^3 + 6\,ac^2df^4x^2 + 4\,ac^3f^4x - 4\left(ad^3f^3x^3 + 3\,acd^2f^3x^2 + ac^3f^3 - 6\,acd^2f + 3\left(ac^2df^3 - 2\,ad\right.\right.}{4\,f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(a*d^3*f^4*x^4 + 4*a*c*d^2*f^4*x^3 + 6*a*c^2*d*f^4*x^2 + 4*a*c^3*f^4*x
- 4*(a*d^3*f^3*x^3 + 3*a*c*d^2*f^3*x^2 + a*c^3*f^3 - 6*a*c*d^2*f + 3*(a*c^2
*d*f^3 - 2*a*d^3*f)*x)*cos(f*x + e) + 12*(a*d^3*f^2*x^2 + 2*a*c*d^2*f^2*x +
 a*c^2*d*f^2 - 2*a*d^3)*sin(f*x + e))/f^4
```

giac [A] time = 0.35, size = 157, normalized size = 1.74

$$\frac{1}{4}\,ad^3x^4+acd^2x^3+\frac{3}{2}\,ac^2dx^2+ac^3x-\frac{\left(ad^3f^3x^3+3\,acd^2f^3x^2+3\,ac^2df^3x+ac^3f^3-6\,ad^3fx-6\,acd^2f\right)\cos\left(fx+e\right)}{f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*a*d^3*x^4 + a*c*d^2*x^3 + 3/2*a*c^2*d*x^2 + a*c^3*x - (a*d^3*f^3*x^3 +
3*a*c*d^2*f^3*x^2 + 3*a*c^2*d*f^3*x + a*c^3*f^3 - 6*a*d^3*f*x - 6*a*c*d^2*f
)*cos(f*x + e)/f^4 + 3*(a*d^3*f^2*x^2 + 2*a*c*d^2*f^2*x + a*c^2*d*f^2 - 2*a
*d^3)*sin(f*x + e)/f^4
```

maple [B] time = 0.04, size = 482, normalized size = 5.36

$$\frac{\frac{a\,d^3\left(-\left(fx+e\right)^3\cos\left(fx+e\right)+3\left(fx+e\right)^2\sin\left(fx+e\right)-6\sin\left(fx+e\right)+6\left(fx+e\right)\cos\left(fx+e\right)\right)}{f^3}+\frac{3ac\,d^2\left(-\left(fx+e\right)^2\cos\left(fx+e\right)+2\cos\left(fx+e\right)+2\left(fx+e\right)\sin\left(fx+e\right)\right)}{f^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*(a+a*sin(f*x+e)),x)
```

```
[Out] 1/f*(a/f^3*d^3*(-(f*x+e)^3*cos(f*x+e)+3*(f*x+e)^2*sin(f*x+e)-6*sin(f*x+e)+6
*(f*x+e)*cos(f*x+e))+3*a/f^2*c*d^2*(-(f*x+e)^2*cos(f*x+e)+2*cos(f*x+e)+2*(f
*x+e)*sin(f*x+e))-3*a/f^3*d^3*e*(-(f*x+e)^2*cos(f*x+e)+2*cos(f*x+e)+2*(f*x+
e)*sin(f*x+e))+3*a/f*c^2*d*(sin(f*x+e)-(f*x+e)*cos(f*x+e))-6*a/f^2*c*d^2*e*
(sin(f*x+e)-(f*x+e)*cos(f*x+e))+3*a/f^3*d^3*e^2*(sin(f*x+e)-(f*x+e)*cos(f*x
+e))-a*c^3*cos(f*x+e)+3*a/f*c^2*d*e*cos(f*x+e)-3*a/f^2*c*d^2*e^2*cos(f*x+e)
+a/f^3*d^3*e^3*cos(f*x+e)+1/4*a/f^3*d^3*(f*x+e)^4+a/f^2*c*d^2*(f*x+e)^3-a/f
^3*d^3*e*(f*x+e)^3+3/2*a/f*c^2*d*(f*x+e)^2-3*a/f^2*c*d^2*e*(f*x+e)^2+3/2*a/
f^3*d^3*e^2*(f*x+e)^2+a*c^3*(f*x+e)-3*a/f*c^2*d*e*(f*x+e)+3*a/f^2*c*d^2*e^2
*(f*x+e)-a/f^3*d^3*e^3*(f*x+e))
```

maxima [B] time = 0.34, size = 462, normalized size = 5.13

$$\frac{4\left(fx+e\right)ac^3+\frac{\left(fx+e\right)^4ad^3}{f^3}-\frac{4\left(fx+e\right)^3ad^3e}{f^3}+\frac{6\left(fx+e\right)^2ad^3e^2}{f^3}-\frac{4\left(fx+e\right)ad^3e^3}{f^3}+\frac{4\left(fx+e\right)^3acd^2}{f^2}-\frac{12\left(fx+e\right)^2acd^2e}{f^2}+\frac{12\left(fx+e\right)acd^2e^2}{f^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(4*(f*x + e)*a*c^3 + (f*x + e)^4*a*d^3/f^3 - 4*(f*x + e)^3*a*d^3*e/f^3
+ 6*(f*x + e)^2*a*d^3*e^2/f^3 - 4*(f*x + e)*a*d^3*e^3/f^3 + 4*(f*x + e)^3*a
*c*d^2/f^2 - 12*(f*x + e)^2*a*c*d^2*e/f^2 + 12*(f*x + e)*a*c*d^2*e^2/f^2 +
6*(f*x + e)^2*a*c^2*d/f - 12*(f*x + e)*a*c^2*d*e/f - 4*a*c^3*cos(f*x + e) +
 4*a*d^3*e^3*cos(f*x + e)/f^3 - 12*a*c*d^2*e^2*cos(f*x + e)/f^2 + 12*a*c^2*
d*e*cos(f*x + e)/f - 12*((f*x + e)*cos(f*x + e) - sin(f*x + e))*a*d^3*e^2/f
^3 + 24*((f*x + e)*cos(f*x + e) - sin(f*x + e))*a*c*d^2*e/f^2 - 12*((f*x +
e)*cos(f*x + e) - sin(f*x + e))*a*c^2*d/f + 12*(((f*x + e)^2 - 2)*cos(f*x +
 e) - 2*(f*x + e)*sin(f*x + e))*a*d^3*e/f^3 - 12*(((f*x + e)^2 - 2)*cos(f*x
 + e) - 2*(f*x + e)*sin(f*x + e))*a*c*d^2/f^2 - 4*(((f*x + e)^3 - 6*f*x - 6
*e)*cos(f*x + e) - 3*((f*x + e)^2 - 2)*sin(f*x + e))*a*d^3/f^3)/f
```

mupad [B] time = 0.26, size = 191, normalized size = 2.12

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(e + f*x))*(c + d*x)^3,x)
```

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

sympy [A] time = 1.79, size = 264, normalized size = 2.93

$$\begin{cases} ac^3x - \frac{ac^3\cos\left(e+fx\right)}{f} + \frac{3ac^2dx^2}{2} - \frac{3ac^2dx\cos\left(e+fx\right)}{f} + \frac{3ac^2d\sin\left(e+fx\right)}{f^2} + acd^2x^3 - \frac{3acd^2x^2\cos\left(e+fx\right)}{f} + \frac{6acd^2x\sin\left(e+fx\right)}{f^2} + \frac{6ac}{} \\ (a\sin(e)+a)\left(c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*(a+a*sin(f*x+e)),x)
```

```
[Out] Piecewise((a*c**3*x - a*c**3*cos(e + f*x)/f + 3*a*c**2*d*x**2/2 - 3*a*c**2*
d*x*cos(e + f*x)/f + 3*a*c**2*d*sin(e + f*x)/f**2 + a*c*d**2*x**3 - 3*a*c*d
**2*x**2*cos(e + f*x)/f + 6*a*c*d**2*x*sin(e + f*x)/f**2 + 6*a*c*d**2*cos(e
 + f*x)/f**3 + a*d**3*x**4/4 - a*d**3*x**3*cos(e + f*x)/f + 3*a*d**3*x**2*s
in(e + f*x)/f**2 + 6*a*d**3*x*cos(e + f*x)/f**3 - 6*a*d**3*sin(e + f*x)/f**
4, Ne(f, 0)), ((a*sin(e) + a)*(c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3 + d**
3*x**4/4), True))
```

3.96 $\int (c+dx)^2(a+a\sin(e+fx))\,dx$

Optimal. Leaf size=68

$$\frac{2ad(c+dx)\sin(e+fx)}{f^2}-\frac{a(c+dx)^2\cos(e+fx)}{f}+\frac{a(c+dx)^3}{3d}+\frac{2ad^2\cos(e+fx)}{f^3}$$

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

Rubi [A] time = 0.09, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3317, 3296, 2638}

$$\frac{2ad(c+dx)\sin(e+fx)}{f^2}-\frac{a(c+dx)^2\cos(e+fx)}{f}+\frac{a(c+dx)^3}{3d}+\frac{2ad^2\cos(e+fx)}{f^3}$$

Antiderivative was successfully verified.

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

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

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

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

Rubi steps

$$\int (c+dx)^2(a+a\sin(e+fx))\,dx = \int \left(a(c+dx)^2 + a(c+dx)^2\sin(e+fx)\right)dx$$
$$= \frac{a(c+dx)^3}{3d} + a\int (c+dx)^2\sin(e+fx)\,dx$$
$$= \frac{a(c+dx)^3}{3d} - \frac{a(c+dx)^2\cos(e+fx)}{f} + \frac{(2ad)\int (c+dx)\cos(e+fx)\,dx}{f}$$
$$= \frac{a(c+dx)^3}{3d} - \frac{a(c+dx)^2\cos(e+fx)}{f} + \frac{2ad(c+dx)\sin(e+fx)}{f^2} - \frac{\left(2ad^2\right)\int s}{}$$
$$= \frac{a(c+dx)^3}{3d} + \frac{2ad^2\cos(e+fx)}{f^3} - \frac{a(c+dx)^2\cos(e+fx)}{f} + \frac{2ad(c+dx)\sin(}{f^2}$$

Mathematica [A] time = 0.52, size = 81, normalized size = 1.19

$$a\left(-\frac{\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2-2\right)\right)\cos(e+fx)}{f^3}+c^2x+\frac{2d(c+dx)\sin(e+fx)}{f^2}+cdx^2+\frac{d^2x^3}{3}\right)$$

Antiderivative was successfully verified.

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

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

fricas [A] time = 0.78, size = 102, normalized size = 1.50

$$\frac{ad^2f^3x^3+3\,acdf^3x^2+3\,ac^2f^3x-3\left(ad^2f^2x^2+2\,acdf^2x+ac^2f^2-2\,ad^2\right)\cos\left(fx+e\right)+6\left(ad^2fx+acdf\right)\sin}{3\,f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [A] time = 0.29, size = 95, normalized size = 1.40

$$\frac{1}{3}\,ad^2x^3+acdx^2+ac^2x-\frac{\left(ad^2f^2x^2+2\,acdf^2x+ac^2f^2-2\,ad^2\right)\cos\left(fx+e\right)}{f^3}+\frac{2\left(ad^2fx+acdf\right)\sin\left(fx+e\right)}{f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [B] time = 0.03, size = 241, normalized size = 3.54

$$\frac{\frac{a d^2\left(-(fx+e)^2\cos(fx+e)+2\cos(fx+e)+2(fx+e)\sin(fx+e)\right)}{f^2}+\frac{2acd(\sin(fx+e)-(fx+e)\cos(fx+e))}{f}-\frac{2a d^2 e(\sin(fx+e)-(fx+e)\cos(fx+e))}{f^2}-a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maximA [B] time = 0.32, size = 239, normalized size = 3.51

$$\frac{3(fx+e)ac^2+\frac{(fx+e)^3ad^2}{f^2}-\frac{3(fx+e)^2ad^2e}{f^2}+\frac{3(fx+e)ad^2e^2}{f^2}+\frac{3(fx+e)^2acd}{f}-\frac{6(fx+e)acde}{f}-3ac^2\cos(fx+e)-\frac{3ad^2e^2\cos(f}{f^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.15, size = 112, normalized size = 1.65

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [A] time = 0.81, size = 151, normalized size = 2.22

$$\begin{cases} ac^2x - \frac{ac^2\cos(e+fx)}{f} + acdx^2 - \frac{2acdx\cos(e+fx)}{f} + \frac{2acd\sin(e+fx)}{f^2} + \frac{ad^2x^3}{3} - \frac{ad^2x^2\cos(e+fx)}{f} + \frac{2ad^2x\sin(e+fx)}{f^2} + \frac{2ad^2\cos(e+ \\ (a\sin(e) + a)\left(c^2x + cdx^2 + \frac{d^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a*c**2*x - a*c**2*cos(e + f*x)/f + a*c*d*x**2 - 2*a*c*d*x*cos(e
+ f*x)/f + 2*a*c*d*sin(e + f*x)/f**2 + a*d**2*x**3/3 - a*d**2*x**2*cos(e +
f*x)/f + 2*a*d**2*x*sin(e + f*x)/f**2 + 2*a*d**2*cos(e + f*x)/f**3, Ne(f, 0
)), ((a*sin(e) + a)*(c**2*x + c*d*x**2 + d**2*x**3/3), True))
```

3.97 $\int (c+dx)(a+a\sin(e+fx))\,dx$

Optimal. Leaf size=45

$$-\frac{a(c+dx)\cos(e+fx)}{f}+\frac{a(c+dx)^2}{2d}+\frac{ad\sin(e+fx)}{f^2}$$

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

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {3317, 3296, 2637}

$$-\frac{a(c+dx)\cos(e+fx)}{f}+\frac{a(c+dx)^2}{2d}+\frac{ad\sin(e+fx)}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*(a + a*Sin[e + f*x]),x]
```

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

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

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

Rubi steps

$$\begin{aligned}\int (c+dx)(a+a\sin(e+fx))\,dx &= \int (a(c+dx)+a(c+dx)\sin(e+fx))\,dx\\ &= \frac{a(c+dx)^2}{2d}+a\int (c+dx)\sin(e+fx)\,dx\\ &= \frac{a(c+dx)^2}{2d}-\frac{a(c+dx)\cos(e+fx)}{f}+\frac{(ad)\int \cos(e+fx)\,dx}{f}\\ &= \frac{a(c+dx)^2}{2d}-\frac{a(c+dx)\cos(e+fx)}{f}+\frac{ad\sin(e+fx)}{f^2}\end{aligned}$$

Mathematica [A] time = 0.39, size = 51, normalized size = 1.13

$$-\frac{a((e+fx)(-2cf+de-dfx)+2f(c+dx)\cos(e+fx)-2d\sin(e+fx))}{2f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*(a + a*Sin[e + f*x]),x]
```

```
[Out] -1/2*(a*((e + f*x)*(d*e - 2*c*f - d*f*x) + 2*f*(c + d*x)*Cos[e + f*x] - 2*d
*Sin[e + f*x]))/f^2
```

fricas [A] time = 0.72, size = 51, normalized size = 1.13

$$\frac{adf^2x^2+2\,acf^2x+2\,ad\sin\left(fx+e\right)-2\left(adfx+acf\right)\cos\left(fx+e\right)}{2\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+a*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/2*(a*d*f^2*x^2 + 2*a*c*f^2*x + 2*a*d*sin(f*x + e) - 2*(a*d*f*x + a*c*f)*c
os(f*x + e))/f^2
```

giac [A] time = 3.74, size = 47, normalized size = 1.04

$$\frac{1}{2}\,adx^2+acx+\frac{ad\sin\left(fx+e\right)}{f^2}-\frac{\left(adfx+acf\right)\cos\left(fx+e\right)}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+a*sin(f*x+e)),x, algorithm="giac")
```

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

maple [B] time = 0.02, size = 90, normalized size = 2.00

$$\frac{\frac{ad\left(\sin\left(fx+e\right)-\left(fx+e\right)\cos\left(fx+e\right)\right)}{f}-ac\cos\left(fx+e\right)+\frac{ade\cos\left(fx+e\right)}{f}+\frac{ad\left(fx+e\right)^{2}}{2f}+ac\left(fx+e\right)-\frac{ade\left(fx+e\right)}{f}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*(a+a*sin(f*x+e)),x)
```

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

maxima [B] time = 0.44, size = 93, normalized size = 2.07

$$\frac{2\left(fx+e\right)ac+\frac{\left(fx+e\right)^{2}ad}{f}-\frac{2\left(fx+e\right)ade}{f}-2\,ac\cos\left(fx+e\right)+\frac{2\,ade\cos\left(fx+e\right)}{f}-\frac{2\left(\left(fx+e\right)\cos\left(fx+e\right)-\sin\left(fx+e\right)\right)ad}{f}}{2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+a*sin(f*x+e)),x, algorithm="maxima")
```

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

mupad [B] time = 0.10, size = 54, normalized size = 1.20

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(e + f*x))*(c + d*x),x)
```

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

sympy [A] time = 0.31, size = 68, normalized size = 1.51

$$\begin{cases} acx - \frac{ac\cos\left(e+fx\right)}{f} + \frac{adx^{2}}{2} - \frac{adx\cos\left(e+fx\right)}{f} + \frac{ad\sin\left(e+fx\right)}{f^{2}} & \text{for}\: f \neq 0 \\ \left(a\sin\left(e\right)+a\right)\left(cx + \frac{dx^{2}}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+a*sin(f*x+e)),x)
```

```
[Out] Piecewise((a*c*x - a*c*cos(e + f*x)/f + a*d*x**2/2 - a*d*x*cos(e + f*x)/f +
 a*d*sin(e + f*x)/f**2, Ne(f, 0)), ((a*sin(e) + a)*(c*x + d*x**2/2), True))
```

3.98 $\int \frac{a+a\sin(e+fx)}{c+dx}\,dx$

Optimal. Leaf size=64

$$\frac{a\mathrm{Ci}\left(xf+\frac{cf}{d}\right)\sin\left(e-\frac{cf}{d}\right)}{d}+\frac{a\cos\left(e-\frac{cf}{d}\right)\mathrm{Si}\left(xf+\frac{cf}{d}\right)}{d}+\frac{a\log(c+dx)}{d}$$

```
[Out] a*ln(d*x+c)/d+a*cos(-e+c*f/d)*Si(c*f/d+f*x)/d-a*Ci(c*f/d+f*x)*sin(-e+c*f/d)
/d
```

Rubi [A] time = 0.15, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3317, 3303, 3299, 3302}

$$\frac{a\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d}+\frac{a\cos\left(e-\frac{cf}{d}\right)\mathrm{Si}\left(xf+\frac{cf}{d}\right)}{d}+\frac{a\log(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sin[e + f*x])/(c + d*x),x]
```

```
[Out] (a*Log[c + d*x])/d + (a*CosIntegral[(c*f)/d + f*x]*Sin[e - (c*f)/d])/d + (a
*Cos[e - (c*f)/d]*SinIntegral[(c*f)/d + f*x])/d
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

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

Rubi steps

$$\begin{aligned}\int \frac{a+a\sin(e+fx)}{c+dx}\,dx &= \int \left(\frac{a}{c+dx}+\frac{a\sin(e+fx)}{c+dx}\right)dx\\ &= \frac{a\log(c+dx)}{d}+a\int \frac{\sin(e+fx)}{c+dx}\,dx\\ &= \frac{a\log(c+dx)}{d}+\left(a\cos\left(e-\frac{cf}{d}\right)\right)\int \frac{\sin\left(\frac{cf}{d}+fx\right)}{c+dx}\,dx+\left(a\sin\left(e-\frac{cf}{d}\right)\right)\int \frac{\cos\left(\frac{cf}{d}+\right.}{c+dx}\\ &= \frac{a\log(c+dx)}{d}+\frac{a\text{Ci}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d}+\frac{a\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(\frac{cf}{d}+fx\right)}{d}\end{aligned}$$

Mathematica [A] time = 0.33, size = 54, normalized size = 0.84

$$\frac{a\left(\text{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\sin\left(e-\frac{cf}{d}\right)+\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(f\left(\frac{c}{d}+x\right)\right)+\log(c+dx)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sin[e + f*x])/(c + d*x),x]
```

```
[Out] (a*(Log[c + d*x] + CosIntegral[f*(c/d + x)]*Sin[e - (c*f)/d] + Cos[e - (c*f
)/d]*SinIntegral[f*(c/d + x)]))/d
```

fricas [A] time = 0.58, size = 93, normalized size = 1.45

$$\frac{2\,a\cos\left(-\frac{de-cf}{d}\right)\text{Si}\left(\frac{dfx+cf}{d}\right)+2\,a\log\left(dx+c\right)-\left(a\,\text{Ci}\left(\frac{dfx+cf}{d}\right)+a\,\text{Ci}\left(-\frac{dfx+cf}{d}\right)\right)\sin\left(-\frac{de-cf}{d}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(f*x+e))/(d*x+c),x, algorithm="fricas")
```

```
[Out] 1/2*(2*a*cos(-(d*e - c*f)/d)*sin_integral((d*f*x + c*f)/d) + 2*a*log(d*x +
c) - (a*cos_integral((d*f*x + c*f)/d) + a*cos_integral(-(d*f*x + c*f)/d))*s
in(-(d*e - c*f)/d))/d
```

giac [C] time = 0.40, size = 712, normalized size = 11.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(f*x+e))/(d*x+c),x, algorithm="giac")
```

```
[Out] 1/2*(a*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 -
 a*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*
a*log(abs(d*x + c))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*a*sin_integral((d*f*x
 + c*f)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*a*real_part(cos_integral(f*x +
 c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e) - 2*a*real_part(cos_integral(-f*x - c*
f/d))*tan(1/2*c*f/d)^2*tan(1/2*e) + 2*a*real_part(cos_integral(f*x + c*f/d)
)*tan(1/2*c*f/d)*tan(1/2*e)^2 + 2*a*real_part(cos_integral(-f*x - c*f/d))*t
an(1/2*c*f/d)*tan(1/2*e)^2 - a*imag_part(cos_integral(f*x + c*f/d))*tan(1/2
*c*f/d)^2 + a*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2 + 2*a*
log(abs(d*x + c))*tan(1/2*c*f/d)^2 - 2*a*sin_integral((d*f*x + c*f)/d)*tan(
1/2*c*f/d)^2 + 4*a*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(
1/2*e) - 4*a*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e
) + 8*a*sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/2*e) - a*imag_pa
rt(cos_integral(f*x + c*f/d))*tan(1/2*e)^2 + a*imag_part(cos_integral(-f*x
- c*f/d))*tan(1/2*e)^2 + 2*a*log(abs(d*x + c))*tan(1/2*e)^2 - 2*a*sin_integ
ral((d*f*x + c*f)/d)*tan(1/2*e)^2 - 2*a*real_part(cos_integral(f*x + c*f/d)
)*tan(1/2*c*f/d) - 2*a*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)
 + 2*a*real_part(cos_integral(f*x + c*f/d))*tan(1/2*e) + 2*a*real_part(cos_
integral(-f*x - c*f/d))*tan(1/2*e) + a*imag_part(cos_integral(f*x + c*f/d))
 - a*imag_part(cos_integral(-f*x - c*f/d)) + 2*a*log(abs(d*x + c)) + 2*a*si
n_integral((d*f*x + c*f)/d))/(d*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + d*tan(1/2*c
*f/d)^2 + d*tan(1/2*e)^2 + d)
```

maple [A] time = 0.03, size = 96, normalized size = 1.50

$$\frac{a\,\mathrm{Si}\left(fx+e+\frac{cf-de}{d}\right)\cos\left(\frac{cf-de}{d}\right)}{d}-\frac{a\,\mathrm{Ci}\left(fx+e+\frac{cf-de}{d}\right)\sin\left(\frac{cf-de}{d}\right)}{d}+\frac{a\ln\left(\left(fx+e\right)d+cf-de\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sin(f*x+e))/(d*x+c),x)
```

```
[Out] a*Si(f*x+e+(c*f-d*e)/d)*cos((c*f-d*e)/d)/d-a*Ci(f*x+e+(c*f-d*e)/d)*sin((c*f
-d*e)/d)/d+a*ln((f*x+e)*d+c*f-d*e)/d
```

maxima [C] time = 0.51, size = 171, normalized size = 2.67

$$\frac{\frac{2\,af\log\left(c+\frac{(fx+e)d}{f}-\frac{de}{f}\right)}{d}+\frac{\left(f\left(-iE_1\left(\frac{i(fx+e)d-ide+icf}{d}\right)+iE_1\left(-\frac{i(fx+e)d-ide+icf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f\left(E_1\left(\frac{i(fx+e)d-ide+icf}{d}\right)+E_1\left(-\frac{i(fx+e)d-ide+icf}{d}\right)\right)\sin}{d}}{2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(f*x+e))/(d*x+c),x, algorithm="maxima")
```

```
[Out] 1/2*(2*a*f*log(c + (f*x + e)*d/f - d*e/f)/d + (f*(-I*exp_integral_e(1, (I*(
f*x + e)*d - I*d*e + I*c*f)/d) + I*exp_integral_e(1, -(I*(f*x + e)*d - I*d*
e + I*c*f)/d))*cos(-(d*e - c*f)/d) + f*(exp_integral_e(1, (I*(f*x + e)*d -
I*d*e + I*c*f)/d) + exp_integral_e(1, -(I*(f*x + e)*d - I*d*e + I*c*f)/d))*
sin(-(d*e - c*f)/d))*a/d)/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+a\,\sin\left(e+f\,x\right)}{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(e + f*x))/(c + d*x),x)
```

```
[Out] int((a + a*sin(e + f*x))/(c + d*x), x)
```

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

$$a\left(\int \frac{\sin\left(e+fx\right)}{c+dx}\,dx+\int \frac{1}{c+dx}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(f*x+e))/(d*x+c),x)
```

```
[Out] a*(Integral(sin(e + f*x)/(c + d*x), x) + Integral(1/(c + d*x), x))
```

3.99 $\int \frac{a+a\sin(e+fx)}{(c+dx)^2}\,dx$

Optimal. Leaf size=88

$$\frac{af\text{Ci}\left(xf+\frac{cf}{d}\right)\cos\left(e-\frac{cf}{d}\right)}{d^2}-\frac{af\sin\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{a\sin(e+fx)}{d(c+dx)}-\frac{a}{d(c+dx)}$$

```
[Out] -a/d/(d*x+c)+a*f*Ci(c*f/d+f*x)*cos(-e+c*f/d)/d^2+a*f*Si(c*f/d+f*x)*sin(-e+c
*f/d)/d^2-a*sin(f*x+e)/d/(d*x+c)
```

Rubi [A] time = 0.21, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3317, 3297, 3303, 3299, 3302}

$$\frac{af\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\cos\left(e-\frac{cf}{d}\right)}{d^2}-\frac{af\sin\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{a\sin(e+fx)}{d(c+dx)}-\frac{a}{d(c+dx)}$$

Antiderivative was successfully verified.

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

```
[Out] -(a/(d*(c + d*x))) + (a*f*Cos[e - (c*f)/d]*CosIntegral[(c*f)/d + f*x])/d^2
- (a*Sin[e + f*x])/(d*(c + d*x)) - (a*f*Sin[e - (c*f)/d]*SinIntegral[(c*f)/
d + f*x])/d^2
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

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

Rubi steps

$$\begin{aligned}
\int \frac{a+a\sin(e+fx)}{(c+dx)^2}\,dx &= \int \left(\frac{a}{(c+dx)^2}+\frac{a\sin(e+fx)}{(c+dx)^2}\right)dx \\
&= -\frac{a}{d(c+dx)}+a\int \frac{\sin(e+fx)}{(c+dx)^2}\,dx \\
&= -\frac{a}{d(c+dx)}-\frac{a\sin(e+fx)}{d(c+dx)}+\frac{(af)\int \frac{\cos(e+fx)}{c+dx}\,dx}{d} \\
&= -\frac{a}{d(c+dx)}-\frac{a\sin(e+fx)}{d(c+dx)}+\frac{\left(af\cos\left(e-\frac{cf}{d}\right)\right)\int \frac{\cos\left(\frac{cf}{d}+fx\right)}{c+dx}\,dx}{d}-\frac{\left(af\sin\left(e-\frac{cf}{d}\right)\right)\int
\end{aligned}$$

$$= -\frac{a}{d(c+dx)}+\frac{af\cos\left(e-\frac{cf}{d}\right)\mathrm{Ci}\left(\frac{cf}{d}+fx\right)}{d^2}-\frac{a\sin(e+fx)}{d(c+dx)}-\frac{af\sin\left(e-\frac{cf}{d}\right)\mathrm{Si}\left(\frac{cf}{d}+\right.}{d^2}$$

Mathematica [A] time = 0.52, size = 110, normalized size = 1.25

$$\frac{a(\sin(e+fx)+1)\left(f(c+dx)\mathrm{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\cos\left(e-\frac{cf}{d}\right)-f(c+dx)\sin\left(e-\frac{cf}{d}\right)\mathrm{Si}\left(f\left(\frac{c}{d}+x\right)\right)-d(\sin(e+fx)+\right.}{d^2(c+dx)\left(\sin\left(\frac{1}{2}(e+fx)\right)+\cos\left(\frac{1}{2}(e+fx)\right)\right)^2}$$

Antiderivative was successfully verified.

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

```
[Out] (a*(1 + Sin[e + f*x])*(f*(c + d*x)*Cos[e - (c*f)/d]*CosIntegral[f*(c/d + x)
] - d*(1 + Sin[e + f*x]) - f*(c + d*x)*Sin[e - (c*f)/d]*SinIntegral[f*(c/d
+ x)]))/(d^2*(c + d*x)*(Cos[(e + f*x)/2] + Sin[(e + f*x)/2])^2)
```

fricas [A] time = 0.79, size = 135, normalized size = 1.53

$$-\frac{2\,ad\sin\left(fx+e\right)-2\left(adfx+acf\right)\sin\left(-\frac{de-cf}{d}\right)\mathrm{Si}\left(\frac{dfx+cf}{d}\right)+2\,ad-\left(\left(adfx+acf\right)\mathrm{Ci}\left(\frac{dfx+cf}{d}\right)+\left(adfx+acf\right)\right.}{2\left(d^3x+cd^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*a*d*sin(f*x + e) - 2*(a*d*f*x + a*c*f)*sin(-(d*e - c*f)/d)*sin_inte
gral((d*f*x + c*f)/d) + 2*a*d - ((a*d*f*x + a*c*f)*cos_integral((d*f*x + c*
f)/d) + (a*d*f*x + a*c*f)*cos_integral(-(d*f*x + c*f)/d))*cos(-(d*e - c*f)/
d))/(d^3*x + c*d^2)
```

giac [B] time = 0.88, size = 578, normalized size = 6.57

$$\frac{\left((dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)f^2\cos\left(\frac{cf-de}{d}\right)\mathrm{Ci}\left(-\frac{(dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)-cf+de}{d}\right)-cf^3\cos\left(\frac{cf-de}{d}\right)\mathrm{Ci}\left(-\frac{(dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)-\right.}{d}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.03, size = 141, normalized size = 1.60

$$\frac{af^2\left(-\frac{\sin\left(fx+e\right)}{\left(\left(fx+e\right)d+cf-de\right)d}+\frac{\frac{\mathrm{Si}\left(fx+e+\frac{cf-de}{d}\right)\sin\left(\frac{cf-de}{d}\right)}{d}+\frac{\mathrm{Ci}\left(fx+e+\frac{cf-de}{d}\right)\cos\left(\frac{cf-de}{d}\right)}{d}}{d}\right)-\frac{af^2}{\left(\left(fx+e\right)d+cf-de\right)d}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [C] time = 0.63, size = 196, normalized size = 2.23

$$-\frac{\frac{2af^2}{\left(fx+e\right)d^2-d^2e+cdf}-\frac{\left(f^2\left(-iE_2\left(\frac{i\left(fx+e\right)d-ide+icf}{d}\right)+iE_2\left(-\frac{i\left(fx+e\right)d-ide+icf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f^2\left(E_2\left(\frac{i\left(fx+e\right)d-ide+icf}{d}\right)+E_2\left(-\frac{i\left(fx+e\right)d-ide+icf}{d}\right)\right)\sin}{\left(fx+e\right)d^2-d^2e+cdf}}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*a*f^2/((f*x + e)*d^2 - d^2*e + c*d*f) - (f^2*(-I*exp_integral_e(2,
(I*(f*x + e)*d - I*d*e + I*c*f)/d) + I*exp_integral_e(2, -(I*(f*x + e)*d -
I*d*e + I*c*f)/d))*cos(-(d*e - c*f)/d) + f^2*(exp_integral_e(2, (I*(f*x + e
)*d - I*d*e + I*c*f)/d) + exp_integral_e(2, -(I*(f*x + e)*d - I*d*e + I*c*f
)/d))*sin(-(d*e - c*f)/d))*a/((f*x + e)*d^2 - d^2*e + c*d*f))/f
```

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

$$\int \frac{a+a\,\sin\left(e+f\,x\right)}{{\left(c+d\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + a*sin(e + f*x))/(c + d*x)^2, x)
```

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

$$a\left(\int \frac{\sin\left(e+fx\right)}{c^2+2cdx+d^2x^2}\,dx+\int \frac{1}{c^2+2cdx+d^2x^2}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a*(Integral(sin(e + f*x)/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(1/(c**
2 + 2*c*d*x + d**2*x**2), x))
```

3.100 $\int \frac{a+a\sin(e+fx)}{(c+dx)^3}\,dx$

Optimal. Leaf size=123

$$-\frac{af^2\text{Ci}\left(xf+\frac{cf}{d}\right)\sin\left(e-\frac{cf}{d}\right)}{2d^3}-\frac{af^2\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{2d^3}-\frac{af\cos(e+fx)}{2d^2(c+dx)}-\frac{a\sin(e+fx)}{2d(c+dx)^2}-\frac{a}{2d(c+dx)^2}$$

```
[Out] -1/2*a/d/(d*x+c)^2-1/2*a*f*cos(f*x+e)/d^2/(d*x+c)-1/2*a*f^2*cos(-e+c*f/d)*S
i(c*f/d+f*x)/d^3+1/2*a*f^2*Ci(c*f/d+f*x)*sin(-e+c*f/d)/d^3-1/2*a*sin(f*x+e)
/d/(d*x+c)^2
```

Rubi [A] time = 0.26, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3317, 3297, 3303, 3299, 3302}

$$-\frac{af^2\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{2d^3}-\frac{af^2\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{2d^3}-\frac{af\cos(e+fx)}{2d^2(c+dx)}-\frac{a\sin(e+fx)}{2d(c+dx)^2}-\frac{a}{2d(c+$$

Antiderivative was successfully verified.

```
[In] Int[(a + a*Sin[e + f*x])/(c + d*x)^3,x]
```

```
[Out] -a/(2*d*(c + d*x)^2) - (a*f*Cos[e + f*x])/(2*d^2*(c + d*x)) - (a*f^2*CosInt
egral[(c*f)/d + f*x]*Sin[e - (c*f)/d])/(2*d^3) - (a*Sin[e + f*x])/(2*d*(c +
 d*x)^2) - (a*f^2*Cos[e - (c*f)/d]*SinIntegral[(c*f)/d + f*x])/(2*d^3)
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

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

Rubi steps

$$
\begin{aligned}
\int \frac{a+a\sin(e+fx)}{(c+dx)^3}\,dx &= \int \left(\frac{a}{(c+dx)^3}+\frac{a\sin(e+fx)}{(c+dx)^3}\right)dx \\
&= -\frac{a}{2d(c+dx)^2}+a\int \frac{\sin(e+fx)}{(c+dx)^3}\,dx \\
&= -\frac{a}{2d(c+dx)^2}-\frac{a\sin(e+fx)}{2d(c+dx)^2}+\frac{(af)\int \frac{\cos(e+fx)}{(c+dx)^2}\,dx}{2d} \\
&= -\frac{a}{2d(c+dx)^2}-\frac{af\cos(e+fx)}{2d^2(c+dx)}-\frac{a\sin(e+fx)}{2d(c+dx)^2}-\frac{\left(af^2\right)\int \frac{\sin(e+fx)}{c+dx}\,dx}{2d^2} \\
&= -\frac{a}{2d(c+dx)^2}-\frac{af\cos(e+fx)}{2d^2(c+dx)}-\frac{a\sin(e+fx)}{2d(c+dx)^2}-\frac{\left(af^2\cos\left(e-\frac{cf}{d}\right)\right)\int \frac{\sin\left(\frac{cf}{d}+fx\right)}{c+dx}\,dx}{2d^2}-\ldots \\
&= -\frac{a}{2d(c+dx)^2}-\frac{af\cos(e+fx)}{2d^2(c+dx)}-\frac{af^2\text{Ci}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{2d^3}-\frac{a\sin(e+fx)}{2d(c+dx)^2}-\frac{af^2\,\text{c}\ldots}{\ldots}
\end{aligned}
$$

Mathematica [A] time = 0.73, size = 104, normalized size = 0.85

$$
-\frac{a\left(f^2(c+dx)^2\text{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\sin\left(e-\frac{cf}{d}\right)+f^2(c+dx)^2\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(f\left(\frac{c}{d}+x\right)\right)+d(f(c+dx)\cos(e+fx)+d\ldots}{2d^3(c+dx)^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + a*Sin[e + f*x])/(c + d*x)^3,x]
```

```
[Out] -1/2*(a*(f^2*(c + d*x)^2*CosIntegral[f*(c/d + x)]*Sin[e - (c*f)/d] + d*(f*(
c + d*x)*Cos[e + f*x] + d*(1 + Sin[e + f*x])) + f^2*(c + d*x)^2*Cos[e - (c*
f)/d]*SinIntegral[f*(c/d + x)]))/(d^3*(c + d*x)^2)
```

fricas [A] time = 0.81, size = 228, normalized size = 1.85

$$-\frac{2\,ad^2\sin\left(fx+e\right)+2\,ad^2+2\left(ad^2f^2x^2+2\,acdf^2x+ac^2f^2\right)\cos\left(-\frac{de-cf}{d}\right)\mathrm{Si}\left(\frac{dfx+cf}{d}\right)+2\left(ad^2fx+acdf\right)\cos\left(\right.}{4\left(d^5x^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(2*a*d^2*sin(f*x + e) + 2*a*d^2 + 2*(a*d^2*f^2*x^2 + 2*a*c*d*f^2*x + a
*c^2*f^2)*cos(-(d*e - c*f)/d)*sin_integral((d*f*x + c*f)/d) + 2*(a*d^2*f*x
+ a*c*d*f)*cos(f*x + e) - ((a*d^2*f^2*x^2 + 2*a*c*d*f^2*x + a*c^2*f^2)*cos_
integral((d*f*x + c*f)/d) + (a*d^2*f^2*x^2 + 2*a*c*d*f^2*x + a*c^2*f^2)*cos
_integral(-(d*f*x + c*f)/d))*sin(-(d*e - c*f)/d))/(d^5*x^2 + 2*c*d^4*x + c^
2*d^3)
```

giac [C] time = 1.36, size = 6157, normalized size = 50.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(a*d^2*f^2*x^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan
(1/2*c*f/d)^2*tan(1/2*e)^2 - a*d^2*f^2*x^2*imag_part(cos_integral(-f*x - c*
f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*a*d^2*f^2*x^2*sin_in
tegral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*a*
d^2*f^2*x^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f
/d)^2*tan(1/2*e) - 2*a*d^2*f^2*x^2*real_part(cos_integral(-f*x - c*f/d))*ta
n(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e) + 2*a*d^2*f^2*x^2*real_part(cos_in
tegral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e)^2 + 2*a*d^2*f
^2*x^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*
tan(1/2*e)^2 + 2*a*c*d*f^2*x*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f
*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*a*c*d*f^2*x*imag_part(cos_integral(
-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 4*a*c*d*f^2*x
*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2
 - a*d^2*f^2*x^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/
2*c*f/d)^2 + a*d^2*f^2*x^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*
x)^2*tan(1/2*c*f/d)^2 - 2*a*d^2*f^2*x^2*sin_integral((d*f*x + c*f)/d)*tan(1
/2*f*x)^2*tan(1/2*c*f/d)^2 + 4*a*d^2*f^2*x^2*imag_part(cos_integral(f*x + c
```

```
*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) - 4*a*d^2*f^2*x^2*imag_part
(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) + 8*a
*d^2*f^2*x^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*c*f/d)*ta
n(1/2*e) - 4*a*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^
2*tan(1/2*c*f/d)^2*tan(1/2*e) - 4*a*c*d*f^2*x*real_part(cos_integral(-f*x -
 c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e) - a*d^2*f^2*x^2*imag_pa
rt(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*e)^2 + a*d^2*f^2*x^2*i
mag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*e)^2 - 2*a*d^2*
f^2*x^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*e)^2 + 4*a*c*d
*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*t
an(1/2*e)^2 + 4*a*c*d*f^2*x*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*f
*x)^2*tan(1/2*c*f/d)*tan(1/2*e)^2 + a*d^2*f^2*x^2*imag_part(cos_integral(f*
x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - a*d^2*f^2*x^2*imag_part(cos_int
egral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*a*d^2*f^2*x^2*sin_in
tegral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + a*c^2*f^2*imag_part
(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 -
a*c^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/
d)^2*tan(1/2*e)^2 + 2*a*c^2*f^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^
2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*a*d^2*f^2*x^2*real_part(cos_integral(f*
x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d) - 2*a*d^2*f^2*x^2*real_part(cos_i
ntegral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d) - 2*a*c*d*f^2*x*imag_p
art(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2 + 2*a*c*d*f^
2*x*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2 -
 4*a*c*d*f^2*x*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*c*f/d)^
2 + 2*a*d^2*f^2*x^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan
(1/2*e) + 2*a*d^2*f^2*x^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x
)^2*tan(1/2*e) + 8*a*c*d*f^2*x*imag_part(cos_integral(f*x + c*f/d))*tan(1/2
*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) - 8*a*c*d*f^2*x*imag_part(cos_integral(-f
*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) + 16*a*c*d*f^2*x*sin_
integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) - 2*a*d^
2*f^2*x^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)
- 2*a*d^2*f^2*x^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*ta
n(1/2*e) - 2*a*c^2*f^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*
tan(1/2*c*f/d)^2*tan(1/2*e) - 2*a*c^2*f^2*real_part(cos_integral(-f*x - c*f
/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e) - 2*a*c*d*f^2*x*imag_part(c
os_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*a*c*d*f^2*x*imag_
part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*e)^2 - 4*a*c*d*f^2*
x*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*a*d^2*f^2*x
^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e)^2 + 2*a*d
^2*f^2*x^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e)^
2 + 2*a*c^2*f^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2
*c*f/d)*tan(1/2*e)^2 + 2*a*c^2*f^2*real_part(cos_integral(-f*x - c*f/d))*ta
n(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e)^2 + 2*a*c*d*f^2*x*imag_part(cos_inte
gral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*a*c*d*f^2*x*imag_part(
cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 4*a*c*d*f^2*x*s
```

in_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*a*d^2*f*x*ta
n(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + a*d^2*f^2*x^2*imag_part(cos_in
tegral(f*x + c*f/d))*tan(1/2*f*x)^2 - a*d^2*f^2*x^2*imag_part(cos_integral(
-f*x - c*f/d))*tan(1/2*f*x)^2 + 2*a*d^2*f^2*x^2*sin_integral((d*f*x + c*f)/
d)*tan(1/2*f*x)^2 - 4*a*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(
1/2*f*x)^2*tan(1/2*c*f/d) - 4*a*c*d*f^2*x*real_part(cos_integral(-f*x - c*f
/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d) - a*d^2*f^2*x^2*imag_part(cos_integral(f
*x + c*f/d))*tan(1/2*c*f/d)^2 + a*d^2*f^2*x^2*imag_part(cos_integral(-f*x -
 c*f/d))*tan(1/2*c*f/d)^2 - 2*a*d^2*f^2*x^2*sin_integral((d*f*x + c*f)/d)*t
an(1/2*c*f/d)^2 - a*c^2*f^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f*
x)^2*tan(1/2*c*f/d)^2 + a*c^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan
(1/2*f*x)^2*tan(1/2*c*f/d)^2 - 2*a*c^2*f^2*sin_integral((d*f*x + c*f)/d)*ta
n(1/2*f*x)^2*tan(1/2*c*f/d)^2 + 4*a*c*d*f^2*x*real_part(cos_integral(f*x +
c*f/d))*tan(1/2*f*x)^2*tan(1/2*e) + 4*a*c*d*f^2*x*real_part(cos_integral(-f
*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*e) + 4*a*d^2*f^2*x^2*imag_part(cos_inte
gral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) - 4*a*d^2*f^2*x^2*imag_part(co
s_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) + 8*a*d^2*f^2*x^2*sin_i
ntegral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/2*e) + 4*a*c^2*f^2*imag_part(
cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) - 4*a*c
^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*
tan(1/2*e) + 8*a*c^2*f^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1
/2*c*f/d)*tan(1/2*e) - 4*a*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*t
an(1/2*c*f/d)^2*tan(1/2*e) - 4*a*c*d*f^2*x*real_part(cos_integral(-f*x - c*
f/d))*tan(1/2*c*f/d)^2*tan(1/2*e) - a*d^2*f^2*x^2*imag_part(cos_integral(f*
x + c*f/d))*tan(1/2*e)^2 + a*d^2*f^2*x^2*imag_part(cos_integral(-f*x - c*f/
d))*tan(1/2*e)^2 - 2*a*d^2*f^2*x^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*e)
^2 - a*c^2*f^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*
e)^2 + a*c^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1
/2*e)^2 - 2*a*c^2*f^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*
e)^2 + 4*a*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*ta
n(1/2*e)^2 + 4*a*c*d*f^2*x*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*
f/d)*tan(1/2*e)^2 + a*c^2*f^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*
c*f/d)^2*tan(1/2*e)^2 - a*c^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan
(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*a*c^2*f^2*sin_integral((d*f*x + c*f)/d)*tan(
1/2*c*f/d)^2*tan(1/2*e)^2 + 2*a*c*d*f*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1
/2*e)^2 + 2*a*c*d*f^2*x*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2
 - 2*a*c*d*f^2*x*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2 + 4*a
*c*d*f^2*x*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2 - 2*a*d^2*f^2*x^2*r
eal_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d) - 2*a*d^2*f^2*x^2*real_p
art(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d) - 2*a*c^2*f^2*real_part(cos_
integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d) - 2*a*c^2*f^2*real_par
t(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d) - 2*a*c*d*f^2*x
*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2 + 2*a*c*d*f^2*x*imag
_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2 - 4*a*c*d*f^2*x*sin_inte
gral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2 - 2*a*d^2*f*x*tan(1/2*f*x)^2*tan(1/2

```
*c*f/d)^2 + 2*a*d^2*f^2*x^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*e)
 + 2*a*d^2*f^2*x^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*e) + 2*a*c
^2*f^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*e) + 2*a
*c^2*f^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*e) +
8*a*c*d*f^2*x*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e
) - 8*a*c*d*f^2*x*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(
1/2*e) + 16*a*c*d*f^2*x*sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/
2*e) - 2*a*c^2*f^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*ta
n(1/2*e) - 2*a*c^2*f^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)
^2*tan(1/2*e) - 8*a*d^2*f*x*tan(1/2*f*x)*tan(1/2*c*f/d)^2*tan(1/2*e) - 2*a*
c*d*f^2*x*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*e)^2 + 2*a*c*d*f^2*x
*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*e)^2 - 4*a*c*d*f^2*x*sin_int
egral((d*f*x + c*f)/d)*tan(1/2*e)^2 + 2*a*d^2*f*x*tan(1/2*f*x)^2*tan(1/2*e)
^2 + 2*a*c^2*f^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/
2*e)^2 + 2*a*c^2*f^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*t
an(1/2*e)^2 - 2*a*d^2*f*x*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*a*d^2*tan(1/2*f
*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + a*d^2*f^2*x^2*imag_part(cos_integral(
f*x + c*f/d)) - a*d^2*f^2*x^2*imag_part(cos_integral(-f*x - c*f/d)) + 2*a*d
^2*f^2*x^2*sin_integral((d*f*x + c*f)/d) + a*c^2*f^2*imag_part(cos_integral
(f*x + c*f/d))*tan(1/2*f*x)^2 - a*c^2*f^2*imag_part(cos_integral(-f*x - c*f
/d))*tan(1/2*f*x)^2 + 2*a*c^2*f^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x
)^2 - 4*a*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d) - 4
*a*c*d*f^2*x*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d) - a*c^2*f
^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2 + a*c^2*f^2*imag_p
art(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2 - 2*a*c^2*f^2*sin_integral
((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2 - 2*a*c*d*f*tan(1/2*f*x)^2*tan(1/2*c*f/d
)^2 + 4*a*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(1/2*e) + 4*a*c
*d*f^2*x*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*e) + 4*a*c^2*f^2*ima
g_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) - 4*a*c^2*f^2*i
mag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) + 8*a*c^2*f^
2*sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/2*e) - 8*a*c*d*f*tan(1
/2*f*x)*tan(1/2*c*f/d)^2*tan(1/2*e) - 4*a*d^2*tan(1/2*f*x)^2*tan(1/2*c*f/d)
^2*tan(1/2*e) - a*c^2*f^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*e)^2
 + a*c^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*e)^2 - 2*a*c^2*f
^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*e)^2 + 2*a*c*d*f*tan(1/2*f*x)^2*ta
n(1/2*e)^2 - 2*a*c*d*f*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 4*a*d^2*tan(1/2*f*x)
*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*a*c*d*f^2*x*imag_part(cos_integral(f*x +
 c*f/d)) - 2*a*c*d*f^2*x*imag_part(cos_integral(-f*x - c*f/d)) + 4*a*c*d*f^
2*x*sin_integral((d*f*x + c*f)/d) - 2*a*d^2*f*x*tan(1/2*f*x)^2 - 2*a*c^2*f^
2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d) - 2*a*c^2*f^2*real_pa
rt(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d) + 2*a*d^2*f*x*tan(1/2*c*f/d)^
2 + 2*a*d^2*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2 + 2*a*c^2*f^2*real_part(cos_int
egral(f*x + c*f/d))*tan(1/2*e) + 2*a*c^2*f^2*real_part(cos_integral(-f*x -
c*f/d))*tan(1/2*e) - 8*a*d^2*f*x*tan(1/2*f*x)*tan(1/2*e) - 2*a*d^2*f*x*tan(
1/2*e)^2 + 2*a*d^2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*a*d^2*tan(1/2*c*f/d)^2*t
```

```
an(1/2*e)^2 + a*c^2*f^2*imag_part(cos_integral(f*x + c*f/d)) - a*c^2*f^2*im
ag_part(cos_integral(-f*x - c*f/d)) + 2*a*c^2*f^2*sin_integral((d*f*x + c*f
)/d) - 2*a*c*d*f*tan(1/2*f*x)^2 + 2*a*c*d*f*tan(1/2*c*f/d)^2 + 4*a*d^2*tan(
1/2*f*x)*tan(1/2*c*f/d)^2 - 8*a*c*d*f*tan(1/2*f*x)*tan(1/2*e) - 4*a*d^2*tan
(1/2*f*x)^2*tan(1/2*e) + 4*a*d^2*tan(1/2*c*f/d)^2*tan(1/2*e) - 2*a*c*d*f*ta
n(1/2*e)^2 - 4*a*d^2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*a*d^2*f*x + 2*a*d^2*tan(
1/2*f*x)^2 + 2*a*d^2*tan(1/2*c*f/d)^2 + 2*a*d^2*tan(1/2*e)^2 + 2*a*c*d*f +
4*a*d^2*tan(1/2*f*x) + 4*a*d^2*tan(1/2*e) + 2*a*d^2)/(d^5*x^2*tan(1/2*f*x)^
2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*c*d^4*x*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2
*tan(1/2*e)^2 + d^5*x^2*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2 + d^5*x^2*tan(1/2*f
*x)^2*tan(1/2*e)^2 + d^5*x^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + c^2*d^3*tan(1/
2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*c*d^4*x*tan(1/2*f*x)^2*tan(1/2*c
*f/d)^2 + 2*c*d^4*x*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*c*d^4*x*tan(1/2*c*f/d)^
2*tan(1/2*e)^2 + d^5*x^2*tan(1/2*f*x)^2 + d^5*x^2*tan(1/2*c*f/d)^2 + c^2*d^
3*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2 + d^5*x^2*tan(1/2*e)^2 + c^2*d^3*tan(1/2*
f*x)^2*tan(1/2*e)^2 + c^2*d^3*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*c*d^4*x*tan
(1/2*f*x)^2 + 2*c*d^4*x*tan(1/2*c*f/d)^2 + 2*c*d^4*x*tan(1/2*e)^2 + d^5*x^2
 + c^2*d^3*tan(1/2*f*x)^2 + c^2*d^3*tan(1/2*c*f/d)^2 + c^2*d^3*tan(1/2*e)^2
 + 2*c*d^4*x + c^2*d^3)
```

maple [A] time = 0.03, size = 177, normalized size = 1.44

$$\frac{a f^{3}\left(-\frac{\sin\left(fx+e\right)}{2\left(\left(fx+e\right)d+cf-de\right)^{2}d}+\frac{-\frac{\cos\left(fx+e\right)}{\left(\left(fx+e\right)d+cf-de\right)d}-\frac{\frac{\mathrm{Si}\left(fx+e+\frac{cf-de}{d}\right)\cos\left(\frac{cf-de}{d}\right)}{d}-\frac{\mathrm{Ci}\left(fx+e+\frac{cf-de}{d}\right)\sin\left(\frac{cf-de}{d}\right)}{d}}{d}}{2d}\right)-\frac{a f^{3}}{2\left(\left(fx+e\right)d+cf-de\right)^{2}d}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sin(f*x+e))/(d*x+c)^3,x)
```

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

maxima [C] time = 0.72, size = 265, normalized size = 2.15

$$-\frac{\frac{af^{3}}{\left(fx+e\right)^{2}d^{3}+d^{3}e^{2}-2\,cd^{2}ef+c^{2}df^{2}-2\,\left(d^{3}e-cd^{2}f\right)\left(fx+e\right)}-\frac{\left(f^{3}\left(-i\,E_{3}\left(\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)+i\,E_{3}\left(-\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f^{3}\left(E_{3}\left(\frac{i\left(fx+e\right)d-i\,d}{d}\right.\right.}{\left(fx+e\right)^{2}d^{3}+d^{3}e^{2}-2\,cd^{2}ef+c^{2}df^{2}-2\,\left(d^{3}e-cd^{2}f\right)(}}{2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(a*f^3/((f*x + e)^2*d^3 + d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*(d^3*e
 - c*d^2*f)*(f*x + e)) - (f^3*(-I*exp_integral_e(3, (I*(f*x + e)*d - I*d*e
+ I*c*f)/d) + I*exp_integral_e(3, -(I*(f*x + e)*d - I*d*e + I*c*f)/d))*cos(
-(d*e - c*f)/d) + f^3*(exp_integral_e(3, (I*(f*x + e)*d - I*d*e + I*c*f)/d)
 + exp_integral_e(3, -(I*(f*x + e)*d - I*d*e + I*c*f)/d))*sin(-(d*e - c*f)/
d))*a/((f*x + e)^2*d^3 + d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*(d^3*e - c*d
^2*f)*(f*x + e)))/f
```

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

$$\int \frac{a + a\,\sin\left(e + f\,x\right)}{\left(c + d\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(e + f*x))/(c + d*x)^3,x)
```

```
[Out] int((a + a*sin(e + f*x))/(c + d*x)^3, x)
```

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

$$a\left(\int \frac{\sin\left(e + fx\right)}{c^3 + 3c^2dx + 3cd^2x^2 + d^3x^3}\,dx + \int \frac{1}{c^3 + 3c^2dx + 3cd^2x^2 + d^3x^3}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(f*x+e))/(d*x+c)**3,x)
```

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

3.101 $\int (c+dx)^3(a+a\sin(e+fx))^2\,dx$

Optimal. Leaf size=237

$$\frac{12a^2d^2(c+dx)\cos(e+fx)}{f^3}+\frac{3a^2d^2(c+dx)\sin(e+fx)\cos(e+fx)}{4f^3}-\frac{3a^2cd^2x}{4f^2}+\frac{3a^2d(c+dx)^2\sin^2(e+fx)}{4f^2}+6a^2\cdots$$

```
[Out] -3/4*a^2*c*d^2*x/f^2-3/8*a^2*d^3*x^2/f^2+3/8*a^2*(d*x+c)^4/d+12*a^2*d^2*(d*
x+c)*cos(f*x+e)/f^3-2*a^2*(d*x+c)^3*cos(f*x+e)/f-12*a^2*d^3*sin(f*x+e)/f^4+
6*a^2*d*(d*x+c)^2*sin(f*x+e)/f^2+3/4*a^2*d^2*(d*x+c)*cos(f*x+e)*sin(f*x+e)/
f^3-1/2*a^2*(d*x+c)^3*cos(f*x+e)*sin(f*x+e)/f-3/8*a^2*d^3*sin(f*x+e)^2/f^4+
3/4*a^2*d*(d*x+c)^2*sin(f*x+e)^2/f^2
```

Rubi [A] time = 0.30, antiderivative size = 237, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {3317, 3296, 2637, 3311, 32, 3310}

$$\frac{12a^2d^2(c+dx)\cos(e+fx)}{f^3}+\frac{3a^2d^2(c+dx)\sin(e+fx)\cos(e+fx)}{4f^3}-\frac{3a^2cd^2x}{4f^2}+\frac{3a^2d(c+dx)^2\sin^2(e+fx)}{4f^2}+6a^2\cdots$$

Antiderivative was successfully verified.

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

```
[Out] (-3*a^2*c*d^2*x)/(4*f^2) - (3*a^2*d^3*x^2)/(8*f^2) + (3*a^2*(c + d*x)^4)/(8
*d) + (12*a^2*d^2*(c + d*x)*Cos[e + f*x])/f^3 - (2*a^2*(c + d*x)^3*Cos[e +
f*x])/f - (12*a^2*d^3*Sin[e + f*x])/f^4 + (6*a^2*d*(c + d*x)^2*Sin[e + f*x]
)/f^2 + (3*a^2*d^2*(c + d*x)*Cos[e + f*x]*Sin[e + f*x])/(4*f^3) - (a^2*(c +
 d*x)^3*Cos[e + f*x]*Sin[e + f*x])/(2*f) - (3*a^2*d^3*Sin[e + f*x]^2)/(8*f^
4) + (3*a^2*d*(c + d*x)^2*Sin[e + f*x]^2)/(4*f^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

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

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

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

Rubi steps

$$\int (c+dx)^3(a+a\sin(e+fx))^2\,dx = \int \left(a^2(c+dx)^3 + 2a^2(c+dx)^3\sin(e+fx) + a^2(c+dx)^3\sin^2(e+fx)\right)dx$$

$$= \frac{a^2(c+dx)^4}{4d} + a^2\int (c+dx)^3\sin^2(e+fx)\,dx + \left(2a^2\right)\int (c+dx)^3\sin(e+fx)$$

$$= \frac{a^2(c+dx)^4}{4d} - \frac{2a^2(c+dx)^3\cos(e+fx)}{f} - \frac{a^2(c+dx)^3\cos(e+fx)\sin(e+fx}{2f}$$

$$= \frac{3a^2(c+dx)^4}{8d} - \frac{2a^2(c+dx)^3\cos(e+fx)}{f} + \frac{6a^2d(c+dx)^2\sin(e+fx)}{f^2} + \frac{3a^2}{}$$

$$= -\frac{3a^2cd^2x}{4f^2} - \frac{3a^2d^3x^2}{8f^2} + \frac{3a^2(c+dx)^4}{8d} + \frac{12a^2d^2(c+dx)\cos(e+fx)}{f^3} - \frac{2a^2(c}{}$$

$$= -\frac{3a^2cd^2x}{4f^2} - \frac{3a^2d^3x^2}{8f^2} + \frac{3a^2(c+dx)^4}{8d} + \frac{12a^2d^2(c+dx)\cos(e+fx)}{f^3} - \frac{2a^2(c}{}$$

Mathematica [A] time = 1.45, size = 216, normalized size = 0.91

$$a^2\left(-2f(c+dx)\left(2c^2f^2+4cdf^2x+d^2\left(2f^2x^2-3\right)\right)\sin(2(e+fx))+96d\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2-2\right)\right)\sin(e$$

Antiderivative was successfully verified.

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

```
[Out] (a^2*(6*f^4*x*(4*c^3 + 6*c^2*d*x + 4*c*d^2*x^2 + d^3*x^3) - 32*f*(c + d*x)*
(c^2*f^2 + 2*c*d*f^2*x + d^2*(-6 + f^2*x^2))*Cos[e + f*x] - 3*d*(2*c^2*f^2
+ 4*c*d*f^2*x + d^2*(-1 + 2*f^2*x^2))*Cos[2*(e + f*x)] + 96*d*(c^2*f^2 + 2*
c*d*f^2*x + d^2*(-2 + f^2*x^2))*Sin[e + f*x] - 2*f*(c + d*x)*(2*c^2*f^2 + 4
*c*d*f^2*x + d^2*(-3 + 2*f^2*x^2))*Sin[2*(e + f*x)]))/(16*f^4)
```

fricas [A] time = 0.71, size = 368, normalized size = 1.55

$$3\,a^2d^3f^4x^4+12\,a^2cd^2f^4x^3+3\left(6\,a^2c^2df^4+a^2d^3f^2\right)x^2-3\left(2\,a^2d^3f^2x^2+4\,a^2cd^2f^2x+2\,a^2c^2df^2-a^2d^3\right)\cos\left(f\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(3*a^2*d^3*f^4*x^4 + 12*a^2*c*d^2*f^4*x^3 + 3*(6*a^2*c^2*d*f^4 + a^2*d^
3*f^2)*x^2 - 3*(2*a^2*d^3*f^2*x^2 + 4*a^2*c*d^2*f^2*x + 2*a^2*c^2*d*f^2 - a
^2*d^3)*cos(f*x + e)^2 + 6*(2*a^2*c^3*f^4 + a^2*c*d^2*f^2)*x - 16*(a^2*d^3*
f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + a^2*c^3*f^3 - 6*a^2*c*d^2*f + 3*(a^2*c^2*d*
f^3 - 2*a^2*d^3*f)*x)*cos(f*x + e) + 2*(24*a^2*d^3*f^2*x^2 + 48*a^2*c*d^2*f
^2*x + 24*a^2*c^2*d*f^2 - 48*a^2*d^3 - (2*a^2*d^3*f^3*x^3 + 6*a^2*c*d^2*f^3
*x^2 + 2*a^2*c^3*f^3 - 3*a^2*c*d^2*f + 3*(2*a^2*c^2*d*f^3 - a^2*d^3*f)*x)*c
os(f*x + e))*sin(f*x + e))/f^4
```

giac [A] time = 2.04, size = 339, normalized size = 1.43

$$\frac{3}{8}\,a^2d^3x^4+\frac{3}{2}\,a^2cd^2x^3+\frac{9}{4}\,a^2c^2dx^2+\frac{3}{2}\,a^2c^3x-\frac{3\left(2\,a^2d^3f^2x^2+4\,a^2cd^2f^2x+2\,a^2c^2df^2-a^2d^3\right)\cos\left(2\,fx+2\,e\right)}{16\,f^4}-\frac{2\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 3/8*a^2*d^3*x^4 + 3/2*a^2*c*d^2*x^3 + 9/4*a^2*c^2*d*x^2 + 3/2*a^2*c^3*x - 3
/16*(2*a^2*d^3*f^2*x^2 + 4*a^2*c*d^2*f^2*x + 2*a^2*c^2*d*f^2 - a^2*d^3)*cos
(2*f*x + 2*e)/f^4 - 2*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*
```

```
f^3*x + a^2*c^3*f^3 - 6*a^2*d^3*f*x - 6*a^2*c*d^2*f)*cos(f*x + e)/f^4 - 1/8
*(2*a^2*d^3*f^3*x^3 + 6*a^2*c*d^2*f^3*x^2 + 6*a^2*c^2*d*f^3*x + 2*a^2*c^3*f
^3 - 3*a^2*d^3*f*x - 3*a^2*c*d^2*f)*sin(2*f*x + 2*e)/f^4 + 6*(a^2*d^3*f^2*x
^2 + 2*a^2*c*d^2*f^2*x + a^2*c^2*d*f^2 - 2*a^2*d^3)*sin(f*x + e)/f^4
```

maple [B] time = 0.05, size = 1135, normalized size = 4.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/f*(a^2/f^3*d^3*((f*x+e)^3*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)-3/4*
(f*x+e)^2*cos(f*x+e)^2+3/2*(f*x+e)*(1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e
)-3/8*(f*x+e)^2-3/8*sin(f*x+e)^2-3/8*(f*x+e)^4)+1/4*a^2/f^3*d^3*(f*x+e)^4+2
*a^2/f^3*d^3*(-(f*x+e)^3*cos(f*x+e)+3*(f*x+e)^2*sin(f*x+e)-6*sin(f*x+e)+6*(
f*x+e)*cos(f*x+e))+a^2*c^3*(f*x+e)-2*a^2*c^3*cos(f*x+e)+a^2*c^3*(-1/2*sin(f
*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)+3*a^2/f^3*d^3*e^2*((f*x+e)*(-1/2*sin(f*x+e)
*cos(f*x+e)+1/2*f*x+1/2*e)-1/4*(f*x+e)^2+1/4*sin(f*x+e)^2)-6*a^2/f^3*d^3*e*
(-(f*x+e)^2*cos(f*x+e)+2*cos(f*x+e)+2*(f*x+e)*sin(f*x+e))+3/2*a^2/f*c^2*d*(
f*x+e)^2-a^2/f^3*d^3*e^3*(f*x+e)+3*a^2/f^2*c*d^2*((f*x+e)^2*(-1/2*sin(f*x+e
)*cos(f*x+e)+1/2*f*x+1/2*e)-1/2*(f*x+e)*cos(f*x+e)^2+1/4*sin(f*x+e)*cos(f*x
+e)+1/4*f*x+1/4*e-1/3*(f*x+e)^3)+6*a^2/f^2*c*d^2*(-(f*x+e)^2*cos(f*x+e)+2*c
os(f*x+e)+2*(f*x+e)*sin(f*x+e))+6*a^2/f*c^2*d*(sin(f*x+e)-(f*x+e)*cos(f*x+e
))+2*a^2/f^3*d^3*e^3*cos(f*x+e)+3*a^2/f*c^2*d*((f*x+e)*(-1/2*sin(f*x+e)*cos
(f*x+e)+1/2*f*x+1/2*e)-1/4*(f*x+e)^2+1/4*sin(f*x+e)^2)+6*a^2/f^3*d^3*e^2*(s
in(f*x+e)-(f*x+e)*cos(f*x+e))-3*a^2/f^3*d^3*e*((f*x+e)^2*(-1/2*sin(f*x+e)*c
os(f*x+e)+1/2*f*x+1/2*e)-1/2*(f*x+e)*cos(f*x+e)^2+1/4*sin(f*x+e)*cos(f*x+e)
+1/4*f*x+1/4*e-1/3*(f*x+e)^3)-a^2/f^3*d^3*e^3*(-1/2*sin(f*x+e)*cos(f*x+e)+1
/2*f*x+1/2*e)+a^2/f^2*c*d^2*(f*x+e)^3+3/2*a^2/f^3*d^3*e^2*(f*x+e)^2-a^2/f^3
*d^3*e*(f*x+e)^3-6*a^2/f^2*c*d^2*e^2*cos(f*x+e)+6*a^2/f*c^2*d*e*cos(f*x+e)-
3*a^2/f^2*c*d^2*e*(f*x+e)^2+3*a^2/f^2*c*d^2*e^2*(f*x+e)-6*a^2/f^2*c*d^2*e*(
(f*x+e)*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)-1/4*(f*x+e)^2+1/4*sin(f*
x+e)^2)-12*a^2/f^2*c*d^2*e*(sin(f*x+e)-(f*x+e)*cos(f*x+e))-3*a^2/f*c^2*d*e*
(f*x+e)-3*a^2/f*c^2*d*e*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)+3*a^2/f^
2*c*d^2*e^2*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e))
```

maxima [B] time = 0.51, size = 969, normalized size = 4.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/16*(4*(2*f*x + 2*e - sin(2*f*x + 2*e))*a^2*c^3 + 16*(f*x + e)*a^2*c^3 + 4
*(f*x + e)^4*a^2*d^3/f^3 - 16*(f*x + e)^3*a^2*d^3*e/f^3 + 24*(f*x + e)^2*a^
2*d^3*e^2/f^3 - 4*(2*f*x + 2*e - sin(2*f*x + 2*e))*a^2*d^3*e^3/f^3 - 16*(f*
x + e)*a^2*d^3*e^3/f^3 + 16*(f*x + e)^3*a^2*c*d^2/f^2 - 48*(f*x + e)^2*a^2*
c*d^2*e/f^2 + 12*(2*f*x + 2*e - sin(2*f*x + 2*e))*a^2*c*d^2*e^2/f^2 + 48*(f
*x + e)*a^2*c*d^2*e^2/f^2 + 24*(f*x + e)^2*a^2*c^2*d/f - 12*(2*f*x + 2*e -
sin(2*f*x + 2*e))*a^2*c^2*d*e/f - 48*(f*x + e)*a^2*c^2*d*e/f - 32*a^2*c^3*c
os(f*x + e) + 32*a^2*d^3*e^3*cos(f*x + e)/f^3 - 96*a^2*c*d^2*e^2*cos(f*x +
e)/f^2 + 96*a^2*c^2*d*e*cos(f*x + e)/f + 6*(2*(f*x + e)^2 - 2*(f*x + e)*sin
(2*f*x + 2*e) - cos(2*f*x + 2*e))*a^2*d^3*e^2/f^3 - 96*((f*x + e)*cos(f*x +
 e) - sin(f*x + e))*a^2*d^3*e^2/f^3 - 12*(2*(f*x + e)^2 - 2*(f*x + e)*sin(2
*f*x + 2*e) - cos(2*f*x + 2*e))*a^2*c*d^2*e/f^2 + 192*((f*x + e)*cos(f*x +
e) - sin(f*x + e))*a^2*c*d^2*e/f^2 + 6*(2*(f*x + e)^2 - 2*(f*x + e)*sin(2*f
*x + 2*e) - cos(2*f*x + 2*e))*a^2*c^2*d/f - 96*((f*x + e)*cos(f*x + e) - si
n(f*x + e))*a^2*c^2*d/f - 2*(4*(f*x + e)^3 - 6*(f*x + e)*cos(2*f*x + 2*e) -
 3*(2*(f*x + e)^2 - 1)*sin(2*f*x + 2*e))*a^2*d^3*e/f^3 + 96*(((f*x + e)^2 -
 2)*cos(f*x + e) - 2*(f*x + e)*sin(f*x + e))*a^2*d^3*e/f^3 + 2*(4*(f*x + e)
^3 - 6*(f*x + e)*cos(2*f*x + 2*e) - 3*(2*(f*x + e)^2 - 1)*sin(2*f*x + 2*e))
*a^2*c*d^2/f^2 - 96*(((f*x + e)^2 - 2)*cos(f*x + e) - 2*(f*x + e)*sin(f*x +
 e))*a^2*c*d^2/f^2 + (2*(f*x + e)^4 - 3*(2*(f*x + e)^2 - 1)*cos(2*f*x + 2*e
) - 2*(2*(f*x + e)^3 - 3*f*x - 3*e)*sin(2*f*x + 2*e))*a^2*d^3/f^3 - 32*(((f
*x + e)^3 - 6*f*x - 6*e)*cos(f*x + e) - 3*((f*x + e)^2 - 2)*sin(f*x + e))*a
^2*d^3/f^3)/f
```

mupad [B] time = 1.32, size = 452, normalized size = 1.91

$$-\frac{96\,a^2\,d^3\,\sin\left(e+f\,x\right)-\frac{3\,a^2\,d^3\,\cos\left(2\,e+2\,f\,x\right)}{2}+16\,a^2\,c^3\,f^3\,\cos\left(e+f\,x\right)-12\,a^2\,c^3\,f^4\,x+2\,a^2\,c^3\,f^3\,\sin\left(2\,e+2\,f\,x\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(96*a^2*d^3*sin(e + f*x) - (3*a^2*d^3*cos(2*e + 2*f*x))/2 + 16*a^2*c^3*f^3
*cos(e + f*x) - 12*a^2*c^3*f^4*x + 2*a^2*c^3*f^3*sin(2*e + 2*f*x) - 3*a^2*d
^3*f^4*x^4 - 96*a^2*c*d^2*f*cos(e + f*x) - 96*a^2*d^3*f*x*cos(e + f*x) + 3*
a^2*d^3*f^2*x^2*cos(2*e + 2*f*x) + 2*a^2*d^3*f^3*x^3*sin(2*e + 2*f*x) - 3*a
^2*c*d^2*f*sin(2*e + 2*f*x) - 48*a^2*c^2*d*f^2*sin(e + f*x) - 3*a^2*d^3*f*x
*sin(2*e + 2*f*x) + 3*a^2*c^2*d*f^2*cos(2*e + 2*f*x) - 18*a^2*c^2*d*f^4*x^2
 - 12*a^2*c*d^2*f^4*x^3 + 16*a^2*d^3*f^3*x^3*cos(e + f*x) - 48*a^2*d^3*f^2*
x^2*sin(e + f*x) + 6*a^2*c*d^2*f^2*x*cos(2*e + 2*f*x) + 48*a^2*c*d^2*f^3*x^
2*cos(e + f*x) + 6*a^2*c^2*d*f^3*x*sin(2*e + 2*f*x) + 6*a^2*c*d^2*f^3*x^2*s
in(2*e + 2*f*x) + 48*a^2*c^2*d*f^3*x*cos(e + f*x) - 96*a^2*c*d^2*f^2*x*sin(
e + f*x))/(8*f^4)
```

sympy [A] time = 4.62, size = 779, normalized size = 3.29

$$\begin{cases} \frac{a^2c^3x\sin^2(e+fx)}{2} + \frac{a^2c^3x\cos^2(e+fx)}{2} + a^2c^3x - \frac{a^2c^3\sin(e+fx)\cos(e+fx)}{2f} - \frac{2a^2c^3\cos(e+fx)}{f} + \frac{3a^2c^2dx^2\sin^2(e+fx)}{4} + \frac{3a^2c^2dx^2\cos^2(}{4} \\ (a\sin(e)+a)^2\left(c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*c**3*x*sin(e + f*x)**2/2 + a**2*c**3*x*cos(e + f*x)**2/2 +
a**2*c**3*x - a**2*c**3*sin(e + f*x)*cos(e + f*x)/(2*f) - 2*a**2*c**3*cos(e
 + f*x)/f + 3*a**2*c**2*d*x**2*sin(e + f*x)**2/4 + 3*a**2*c**2*d*x**2*cos(e
 + f*x)**2/4 + 3*a**2*c**2*d*x**2/2 - 3*a**2*c**2*d*x*sin(e + f*x)*cos(e +
f*x)/(2*f) - 6*a**2*c**2*d*x*cos(e + f*x)/f + 6*a**2*c**2*d*sin(e + f*x)/f*
*2 - 3*a**2*c**2*d*cos(e + f*x)**2/(4*f**2) + a**2*c*d**2*x**3*sin(e + f*x)
**2/2 + a**2*c*d**2*x**3*cos(e + f*x)**2/2 + a**2*c*d**2*x**3 - 3*a**2*c*d*
*2*x**2*sin(e + f*x)*cos(e + f*x)/(2*f) - 6*a**2*c*d**2*x**2*cos(e + f*x)/f
 + 3*a**2*c*d**2*x*sin(e + f*x)**2/(4*f**2) + 12*a**2*c*d**2*x*sin(e + f*x)
/f**2 - 3*a**2*c*d**2*x*cos(e + f*x)**2/(4*f**2) + 3*a**2*c*d**2*sin(e + f*
x)*cos(e + f*x)/(4*f**3) + 12*a**2*c*d**2*cos(e + f*x)/f**3 + a**2*d**3*x**
4*sin(e + f*x)**2/8 + a**2*d**3*x**4*cos(e + f*x)**2/8 + a**2*d**3*x**4/4 -
 a**2*d**3*x**3*sin(e + f*x)*cos(e + f*x)/(2*f) - 2*a**2*d**3*x**3*cos(e +
f*x)/f + 3*a**2*d**3*x**2*sin(e + f*x)**2/(8*f**2) + 6*a**2*d**3*x**2*sin(e
 + f*x)/f**2 - 3*a**2*d**3*x**2*cos(e + f*x)**2/(8*f**2) + 3*a**2*d**3*x*si
n(e + f*x)*cos(e + f*x)/(4*f**3) + 12*a**2*d**3*x*cos(e + f*x)/f**3 - 12*a*
*2*d**3*sin(e + f*x)/f**4 + 3*a**2*d**3*cos(e + f*x)**2/(8*f**4), Ne(f, 0))
, ((a*sin(e) + a)**2*(c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3 + d**3*x**4/4)
, True))
```

3.102 $\int (c+dx)^2(a+a\sin(e+fx))^2\,dx$

Optimal. Leaf size=168

$$\frac{a^2d(c+dx)\sin^2(e+fx)}{2f^2}+\frac{4a^2d(c+dx)\sin(e+fx)}{f^2}-\frac{2a^2(c+dx)^2\cos(e+fx)}{f}-\frac{a^2(c+dx)^2\sin(e+fx)\cos(e+fx)}{2f}$$

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

Rubi [A] time = 0.19, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {3317, 3296, 2638, 3311, 32, 2635, 8}

$$\frac{a^2d(c+dx)\sin^2(e+fx)}{2f^2}+\frac{4a^2d(c+dx)\sin(e+fx)}{f^2}-\frac{2a^2(c+dx)^2\cos(e+fx)}{f}-\frac{a^2(c+dx)^2\sin(e+fx)\cos(e+fx)}{2f}$$

Antiderivative was successfully verified.

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

```
[Out] -(a^2*d^2*x)/(4*f^2) + (a^2*(c + d*x)^3)/(2*d) + (4*a^2*d^2*Cos[e + f*x])/f
^3 - (2*a^2*(c + d*x)^2*Cos[e + f*x])/f + (4*a^2*d*(c + d*x)*Sin[e + f*x])/
f^2 + (a^2*d^2*Cos[e + f*x]*Sin[e + f*x])/(4*f^3) - (a^2*(c + d*x)^2*Cos[e
+ f*x]*Sin[e + f*x])/(2*f) + (a^2*d*(c + d*x)*Sin[e + f*x]^2)/(2*f^2)
```

Rule 8

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

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2635

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

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

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

Rubi steps

$$\int (c+dx)^2(a+a\sin(e+fx))^2\,dx = \int \left(a^2(c+dx)^2+2a^2(c+dx)^2\sin(e+fx)+a^2(c+dx)^2\sin^2(e+fx)\right)dx$$

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

$$= \frac{a^2(c+dx)^3}{3d}-\frac{2a^2(c+dx)^2\cos(e+fx)}{f}-\frac{a^2(c+dx)^2\cos(e+fx)\sin(e+fx}{2f}$$

$$= \frac{a^2(c+dx)^3}{2d}-\frac{2a^2(c+dx)^2\cos(e+fx)}{f}+\frac{4a^2d(c+dx)\sin(e+fx)}{f^2}+\frac{a^2d^2 c}{}$$

$$= -\frac{a^2d^2x}{4f^2}+\frac{a^2(c+dx)^3}{2d}+\frac{4a^2d^2\cos(e+fx)}{f^3}-\frac{2a^2(c+dx)^2\cos(e+fx)}{f}+\frac{4a}{}$$

Mathematica [A] time = 0.67, size = 182, normalized size = 1.08

$$\frac{a^2\left(-16\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2-2\right)\right)\cos(e+fx)-2c^2f^2\sin(2(e+fx))+12c^2f^3x-4cdf^2x\sin(2(e+fx))\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (a^2*(12*c^2*f^3*x + 12*c*d*f^3*x^2 + 4*d^2*f^3*x^3 - 16*(c^2*f^2 + 2*c*d*f
^2*x + d^2*(-2 + f^2*x^2))*Cos[e + f*x] - 2*d*f*(c + d*x)*Cos[2*(e + f*x)]
+ 32*c*d*f*Sin[e + f*x] + 32*d^2*f*x*Sin[e + f*x] + d^2*Sin[2*(e + f*x)] -
2*c^2*f^2*Sin[2*(e + f*x)] - 4*c*d*f^2*x*Sin[2*(e + f*x)] - 2*d^2*f^2*x^2*S
in[2*(e + f*x)]))/(8*f^3)
```

fricas [A] time = 0.78, size = 212, normalized size = 1.26

$$\frac{2a^2d^2f^3x^3+6a^2cdf^3x^2-2\left(a^2d^2fx+a^2cdf\right)\cos\left(fx+e\right)^2+\left(6a^2c^2f^3+a^2d^2f\right)x-8\left(a^2d^2f^2x^2+2a^2cdf^2x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(2*a^2*d^2*f^3*x^3 + 6*a^2*c*d*f^3*x^2 - 2*(a^2*d^2*f*x + a^2*c*d*f)*co
s(f*x + e)^2 + (6*a^2*c^2*f^3 + a^2*d^2*f)*x - 8*(a^2*d^2*f^2*x^2 + 2*a^2*c
*d*f^2*x + a^2*c^2*f^2 - 2*a^2*d^2)*cos(f*x + e) + (16*a^2*d^2*f*x + 16*a^2
*c*d*f - (2*a^2*d^2*f^2*x^2 + 4*a^2*c*d*f^2*x + 2*a^2*c^2*f^2 - a^2*d^2)*co
s(f*x + e))*sin(f*x + e))/f^3
```

giac [A] time = 3.64, size = 207, normalized size = 1.23

$$\frac{1}{2}a^2d^2x^3+\frac{3}{2}a^2cdx^2+\frac{3}{2}a^2c^2x-\frac{\left(a^2d^2fx+a^2cdf\right)\cos\left(2fx+2e\right)}{4f^3}-\frac{2\left(a^2d^2f^2x^2+2a^2cdf^2x+a^2c^2f^2-2a^2d^2\right)\mathrm{c}}{f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [B] time = 0.05, size = 567, normalized size = 3.38

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [B] time = 0.46, size = 508, normalized size = 3.02

$$\frac{6\left(2fx+2e-\sin\left(2fx+2e\right)\right)a^2c^2+24\left(fx+e\right)a^2c^2+\frac{8\left(fx+e\right)^3a^2d^2}{f^2}-\frac{24\left(fx+e\right)^2a^2d^2e}{f^2}+\frac{6\left(2fx+2e-\sin\left(2fx+2e\right)\right)a^2d^2e^2}{f^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/24*(6*(2*f*x + 2*e - sin(2*f*x + 2*e))*a^2*c^2 + 24*(f*x + e)*a^2*c^2 + 8
*(f*x + e)^3*a^2*d^2/f^2 - 24*(f*x + e)^2*a^2*d^2*e/f^2 + 6*(2*f*x + 2*e -
sin(2*f*x + 2*e))*a^2*d^2*e^2/f^2 + 24*(f*x + e)*a^2*d^2*e^2/f^2 + 24*(f*x
+ e)^2*a^2*c*d/f - 12*(2*f*x + 2*e - sin(2*f*x + 2*e))*a^2*c*d*e/f - 48*(f*
x + e)*a^2*c*d*e/f - 48*a^2*c^2*cos(f*x + e) - 48*a^2*d^2*e^2*cos(f*x + e)/
f^2 + 96*a^2*c*d*e*cos(f*x + e)/f - 6*(2*(f*x + e)^2 - 2*(f*x + e)*sin(2*f*
x + 2*e) - cos(2*f*x + 2*e))*a^2*d^2*e/f^2 + 96*((f*x + e)*cos(f*x + e) - s
in(f*x + e))*a^2*d^2*e/f^2 + 6*(2*(f*x + e)^2 - 2*(f*x + e)*sin(2*f*x + 2*e
) - cos(2*f*x + 2*e))*a^2*c*d/f - 96*((f*x + e)*cos(f*x + e) - sin(f*x + e)
)*a^2*c*d/f + (4*(f*x + e)^3 - 6*(f*x + e)*cos(2*f*x + 2*e) - 3*(2*(f*x + e
)^2 - 1)*sin(2*f*x + 2*e))*a^2*d^2/f^2 - 48*(((f*x + e)^2 - 2)*cos(f*x + e)
 - 2*(f*x + e)*sin(f*x + e))*a^2*d^2/f^2)/f
```

mupad [B] time = 0.97, size = 255, normalized size = 1.52

$$-\frac{8\,a^2\,c^2\,f^2\,\cos\left(e+f\,x\right)-\frac{a^2\,d^2\,\sin\left(2\,e+2\,f\,x\right)}{2}-16\,a^2\,d^2\,\cos\left(e+f\,x\right)-6\,a^2\,c^2\,f^3\,x+a^2\,c^2\,f^2\,\sin\left(2\,e+2\,f\,x\right)-2\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(8*a^2*c^2*f^2*cos(e + f*x) - (a^2*d^2*sin(2*e + 2*f*x))/2 - 16*a^2*d^2*co
s(e + f*x) - 6*a^2*c^2*f^3*x + a^2*c^2*f^2*sin(2*e + 2*f*x) - 2*a^2*d^2*f^3
*x^3 + a^2*c*d*f*cos(2*e + 2*f*x) - 16*a^2*d^2*f*x*sin(e + f*x) + a^2*d^2*f
^2*x^2*sin(2*e + 2*f*x) - 6*a^2*c*d*f^3*x^2 + a^2*d^2*f*x*cos(2*e + 2*f*x)
- 16*a^2*c*d*f*sin(e + f*x) + 8*a^2*d^2*f^2*x^2*cos(e + f*x) + 16*a^2*c*d*f
^2*x*cos(e + f*x) + 2*a^2*c*d*f^2*x*sin(2*e + 2*f*x))/(4*f^3)
```

sympy [A] time = 2.12, size = 456, normalized size = 2.71

$$\begin{cases} \frac{a^2c^2x\sin^2\left(e+fx\right)}{2}+\frac{a^2c^2x\cos^2\left(e+fx\right)}{2}+a^2c^2x-\frac{a^2c^2\sin\left(e+fx\right)\cos\left(e+fx\right)}{2f}-\frac{2a^2c^2\cos\left(e+fx\right)}{f}+\frac{a^2cdx^2\sin^2\left(e+fx\right)}{2}+\frac{a^2cdx^2\cos^2\left(e+\right.}{2} \\ \left(a\sin\left(e\right)+a\right)^2\left(c^2x+cdx^2+\frac{d^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*c**2*x*sin(e + f*x)**2/2 + a**2*c**2*x*cos(e + f*x)**2/2 +
a**2*c**2*x - a**2*c**2*sin(e + f*x)*cos(e + f*x)/(2*f) - 2*a**2*c**2*cos(e
 + f*x)/f + a**2*c*d*x**2*sin(e + f*x)**2/2 + a**2*c*d*x**2*cos(e + f*x)**2
/2 + a**2*c*d*x**2 - a**2*c*d*x*sin(e + f*x)*cos(e + f*x)/f - 4*a**2*c*d*x*
cos(e + f*x)/f + 4*a**2*c*d*sin(e + f*x)/f**2 - a**2*c*d*cos(e + f*x)**2/(2
*f**2) + a**2*d**2*x**3*sin(e + f*x)**2/6 + a**2*d**2*x**3*cos(e + f*x)**2/
6 + a**2*d**2*x**3/3 - a**2*d**2*x**2*sin(e + f*x)*cos(e + f*x)/(2*f) - 2*a
**2*d**2*x**2*cos(e + f*x)/f + a**2*d**2*x*sin(e + f*x)**2/(4*f**2) + 4*a**
2*d**2*x*sin(e + f*x)/f**2 - a**2*d**2*x*cos(e + f*x)**2/(4*f**2) + a**2*d*
*2*sin(e + f*x)*cos(e + f*x)/(4*f**3) + 4*a**2*d**2*cos(e + f*x)/f**3, Ne(f
, 0)), ((a*sin(e) + a)**2*(c**2*x + c*d*x**2 + d**2*x**3/3), True))
```

3.103 $\int (c+dx)(a+a\sin(e+fx))^2\,dx$

Optimal. Leaf size=118

$$-\frac{2a^2(c+dx)\cos(e+fx)}{f}-\frac{a^2(c+dx)\sin(e+fx)\cos(e+fx)}{2f}+\frac{a^2(c+dx)^2}{2d}+\frac{1}{2}a^2cx+\frac{a^2d\sin^2(e+fx)}{4f^2}+\frac{2a^2d\sin(e}{f^2}$$

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

Rubi [A] time = 0.10, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3317, 3296, 2637, 3310}

$$-\frac{2a^2(c+dx)\cos(e+fx)}{f}-\frac{a^2(c+dx)\sin(e+fx)\cos(e+fx)}{2f}+\frac{a^2(c+dx)^2}{2d}+\frac{1}{2}a^2cx+\frac{a^2d\sin^2(e+fx)}{4f^2}+\frac{2a^2d\sin(e}{f^2}$$

Antiderivative was successfully verified.

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

```
[Out] (a^2*c*x)/2 + (a^2*d*x^2)/4 + (a^2*(c + d*x)^2)/(2*d) - (2*a^2*(c + d*x)*Co
s[e + f*x])/f + (2*a^2*d*Sin[e + f*x])/f^2 - (a^2*(c + d*x)*Cos[e + f*x]*Si
n[e + f*x])/(2*f) + (a^2*d*Sin[e + f*x]^2)/(4*f^2)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

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

Rule 3317

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

Rubi steps

$$\int (c+dx)(a+a\sin(e+fx))^2\,dx = \int \left(a^2(c+dx)+2a^2(c+dx)\sin(e+fx)+a^2(c+dx)\sin^2(e+fx)\right)\,dx$$
$$= \frac{a^2(c+dx)^2}{2d}+a^2\int (c+dx)\sin^2(e+fx)\,dx+\left(2a^2\right)\int (c+dx)\sin(e+fx)\,d$$
$$= \frac{a^2(c+dx)^2}{2d}-\frac{2a^2(c+dx)\cos(e+fx)}{f}-\frac{a^2(c+dx)\cos(e+fx)\sin(e+fx)}{2f}$$
$$= \frac{1}{2}a^2cx+\frac{1}{4}a^2dx^2+\frac{a^2(c+dx)^2}{2d}-\frac{2a^2(c+dx)\cos(e+fx)}{f}+\frac{2a^2d\sin(e+f}{f^2}$$

Mathematica [A] time = 1.12, size = 80, normalized size = 0.68

$$-\frac{a^2(6(e+fx)(d(e-fx)-2cf)+2f(c+dx)\sin(2(e+fx))+16f(c+dx)\cos(e+fx)-16d\sin(e+fx)+d\cos}{8f^2}$$

Antiderivative was successfully verified.

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

```
[Out] -1/8*(a^2*(6*(e + f*x)*(-2*c*f + d*(e - f*x)) + 16*f*(c + d*x)*Cos[e + f*x]
 + d*Cos[2*(e + f*x)] - 16*d*Sin[e + f*x] + 2*f*(c + d*x)*Sin[2*(e + f*x)])
)/f^2
```

fricas [A] time = 0.87, size = 101, normalized size = 0.86

$$\frac{3\,a^2df^2x^2+6\,a^2cf^2x-a^2d\cos\left(fx+e\right)^2-8\left(a^2dfx+a^2cf\right)\cos\left(fx+e\right)+2\left(4\,a^2d-\left(a^2dfx+a^2cf\right)\cos\left(fx\right.\right.}{4\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [A] time = 2.19, size = 107, normalized size = 0.91

$$\frac{3}{4}\,a^2dx^2+\frac{3}{2}\,a^2cx-\frac{a^2d\cos\left(2\,fx+2\,e\right)}{8\,f^2}+\frac{2\,a^2d\sin\left(fx+e\right)}{f^2}-\frac{2\,\left(a^2dfx+a^2cf\right)\cos\left(fx+e\right)}{f^2}-\frac{\left(a^2dfx+a^2cf\right)\sin\left(2\right.}{4\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [B] time = 0.04, size = 219, normalized size = 1.86

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [A] time = 0.45, size = 205, normalized size = 1.74

$$\frac{2\left(2\,fx+2\,e-\sin\left(2\,fx+2\,e\right)\right)a^2c+8\left(fx+e\right)a^2c+\frac{4\left(fx+e\right)^2a^2d}{f}-\frac{2\left(2\,fx+2\,e-\sin\left(2\,fx+2\,e\right)\right)a^2de}{f}-\frac{8\left(fx+e\right)a^2de}{f}-16\,a^2c}{8\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*(2*(2*f*x + 2*e - sin(2*f*x + 2*e))*a^2*c + 8*(f*x + e)*a^2*c + 4*(f*x
+ e)^2*a^2*d/f - 2*(2*f*x + 2*e - sin(2*f*x + 2*e))*a^2*d*e/f - 8*(f*x + e)
*a^2*d*e/f - 16*a^2*c*cos(f*x + e) + 16*a^2*d*e*cos(f*x + e)/f + (2*(f*x +
e)^2 - 2*(f*x + e)*sin(2*f*x + 2*e) - cos(2*f*x + 2*e))*a^2*d/f - 16*((f*x
+ e)*cos(f*x + e) - sin(f*x + e))*a^2*d/f)/f
```

mupad [B] time = 0.73, size = 127, normalized size = 1.08

$$\frac{a^2\,d\sin\left(e+f\,x\right)^2+8\,a^2\,d\,\sin\left(e+f\,x\right)+16\,a^2\,c\,f\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2+3\,a^2\,d\,f^2\,x^2-a^2\,c\,f\,\sin\left(2\,e+2\,f\,x\right)+6\,a^2\,c}{4\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (a^2*d*sin(e + f*x)^2 + 8*a^2*d*sin(e + f*x) + 16*a^2*c*f*sin(e/2 + (f*x)/2
)^2 + 3*a^2*d*f^2*x^2 - a^2*c*f*sin(2*e + 2*f*x) + 6*a^2*c*f^2*x - a^2*d*f*
x*sin(2*e + 2*f*x) + 8*a^2*d*f*x*(2*sin(e/2 + (f*x)/2)^2 - 1))/(4*f^2)
```

sympy [A] time = 0.82, size = 219, normalized size = 1.86

$$\begin{cases} \frac{a^2cx\sin^2\left(e+fx\right)}{2}+\frac{a^2cx\cos^2\left(e+fx\right)}{2}+a^2cx-\frac{a^2c\sin\left(e+fx\right)\cos\left(e+fx\right)}{2f}-\frac{2a^2c\cos\left(e+fx\right)}{f}+\frac{a^2dx^2\sin^2\left(e+fx\right)}{4}+\frac{a^2dx^2\cos^2\left(e+fx\right)}{4}+ \\ (a\sin(e)+a)^2\left(cx+\frac{dx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a**2*c*x*sin(e + f*x)**2/2 + a**2*c*x*cos(e + f*x)**2/2 + a**2*c
*x - a**2*c*sin(e + f*x)*cos(e + f*x)/(2*f) - 2*a**2*c*cos(e + f*x)/f + a**
2*d*x**2*sin(e + f*x)**2/4 + a**2*d*x**2*cos(e + f*x)**2/4 + a**2*d*x**2/2
- a**2*d*x*sin(e + f*x)*cos(e + f*x)/(2*f) - 2*a**2*d*x*cos(e + f*x)/f + 2*
a**2*d*sin(e + f*x)/f**2 - a**2*d*cos(e + f*x)**2/(4*f**2), Ne(f, 0)), ((a*
sin(e) + a)**2*(c*x + d*x**2/2), True))
```

3.104 $\int \frac{(a+a\sin(e+fx))^2}{c+dx}\,dx$

Optimal. Leaf size=145

$$\frac{2a^2\text{Ci}\left(xf+\frac{cf}{d}\right)\sin\left(e-\frac{cf}{d}\right)}{d}-\frac{a^2\text{Ci}\left(2xf+\frac{2cf}{d}\right)\cos\left(2e-\frac{2cf}{d}\right)}{2d}+\frac{a^2\sin\left(2e-\frac{2cf}{d}\right)\text{Si}\left(2xf+\frac{2cf}{d}\right)}{2d}+\frac{2a^2\cos\left(e-\frac{cf}{d}\right)}{d}$$

```
[Out] -1/2*a^2*Ci(2*c*f/d+2*f*x)*cos(-2*e+2*c*f/d)/d+3/2*a^2*ln(d*x+c)/d+2*a^2*co
s(-e+c*f/d)*Si(c*f/d+f*x)/d-1/2*a^2*Si(2*c*f/d+2*f*x)*sin(-2*e+2*c*f/d)/d-2
*a^2*Ci(c*f/d+f*x)*sin(-e+c*f/d)/d
```

Rubi [A] time = 0.37, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3318, 3312, 3303, 3299, 3302}

$$\frac{2a^2\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d}-\frac{a^2\text{CosIntegral}\left(\frac{2cf}{d}+2fx\right)\cos\left(2e-\frac{2cf}{d}\right)}{2d}+\frac{a^2\sin\left(2e-\frac{2cf}{d}\right)\text{Si}\left(2xf+\frac{2cf}{d}\right)}{2d}$$

Antiderivative was successfully verified.

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

```
[Out] -(a^2*Cos[2*e - (2*c*f)/d]*CosIntegral[(2*c*f)/d + 2*f*x])/(2*d) + (3*a^2*L
og[c + d*x])/(2*d) + (2*a^2*CosIntegral[(c*f)/d + f*x]*Sin[e - (c*f)/d])/d
+ (2*a^2*Cos[e - (c*f)/d]*SinIntegral[(c*f)/d + f*x])/d + (a^2*Sin[2*e - (2
*c*f)/d]*SinIntegral[(2*c*f)/d + 2*f*x])/(2*d)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
```

```
NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3318

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

Rubi steps

$$\begin{aligned}\int \frac{(a+a\sin(e+fx))^2}{c+dx}\,dx &= \left(4a^2\right)\int \frac{\sin^4\left(\frac{1}{2}\left(e+\frac{\pi}{2}\right)+\frac{fx}{2}\right)}{c+dx}\,dx\\
&= \left(4a^2\right)\int \left(\frac{3}{8(c+dx)}-\frac{\cos(2e+2fx)}{8(c+dx)}+\frac{\sin(e+fx)}{2(c+dx)}\right)dx\\
&= \frac{3a^2\log(c+dx)}{2d}-\frac{1}{2}a^2\int \frac{\cos(2e+2fx)}{c+dx}\,dx+\left(2a^2\right)\int \frac{\sin(e+fx)}{c+dx}\,dx\\
&= \frac{3a^2\log(c+dx)}{2d}-\frac{1}{2}\left(a^2\cos\left(2e-\frac{2cf}{d}\right)\right)\int \frac{\cos\left(\frac{2cf}{d}+2fx\right)}{c+dx}\,dx+\left(2a^2\cos\left(e-\frac{cf}{d}\right.\right.\\
&= -\frac{a^2\cos\left(2e-\frac{2cf}{d}\right)\text{Ci}\left(\frac{2cf}{d}+2fx\right)}{2d}+\frac{3a^2\log(c+dx)}{2d}+\frac{2a^2\text{Ci}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right.}{d}\end{aligned}$$

Mathematica [A] time = 0.31, size = 114, normalized size = 0.79

$$\frac{a^2\left(4\text{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\sin\left(e-\frac{cf}{d}\right)+\text{Ci}\left(\frac{2f(c+dx)}{d}\right)\left(-\cos\left(2e-\frac{2cf}{d}\right)\right)+\sin\left(2e-\frac{2cf}{d}\right)\text{Si}\left(\frac{2f(c+dx)}{d}\right)+4\cos\left(e-\frac{cf}{d}\right)\text{S}\right.}{2d}$$

Antiderivative was successfully verified.

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

```
[Out] (a^2*(-(Cos[2*e - (2*c*f)/d]*CosIntegral[(2*f*(c + d*x))/d]) + 3*Log[c + d*
x] + 4*CosIntegral[f*(c/d + x)]*Sin[e - (c*f)/d] + 4*Cos[e - (c*f)/d]*SinIn
```

```
tegral[f*(c/d + x)] + Sin[2*e - (2*c*f)/d]*SinIntegral[(2*f*(c + d*x))/d]))
/(2*d)
```

fricas [A] time = 0.75, size = 186, normalized size = 1.28

$$-\frac{2\,a^2\sin\left(-\frac{2\left(de-cf\right)}{d}\right)\mathrm{Si}\left(\frac{2\left(dfx+cf\right)}{d}\right)-8\,a^2\cos\left(-\frac{de-cf}{d}\right)\mathrm{Si}\left(\frac{dfx+cf}{d}\right)-6\,a^2\log\left(dx+c\right)+\left(a^2\,\mathrm{Ci}\left(\frac{2\left(dfx+cf\right)}{d}\right)+a^2\,\mathrm{Ci}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/4*(2*a^2*sin(-2*(d*e - c*f)/d)*sin_integral(2*(d*f*x + c*f)/d) - 8*a^2*c
os(-(d*e - c*f)/d)*sin_integral((d*f*x + c*f)/d) - 6*a^2*log(d*x + c) + (a^
2*cos_integral(2*(d*f*x + c*f)/d) + a^2*cos_integral(-2*(d*f*x + c*f)/d))*c
os(-2*(d*e - c*f)/d) + 4*(a^2*cos_integral((d*f*x + c*f)/d) + a^2*cos_integ
ral(-(d*f*x + c*f)/d))*sin(-(d*e - c*f)/d))/d
```

giac [C] time = 1.19, size = 7049, normalized size = 48.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(4*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)
^2*tan(1/2*e)^2*tan(e)^2 - 4*a^2*imag_part(cos_integral(-f*x - c*f/d))*tan(
c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 6*a^2*log(abs(d*x + c))*t
an(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - a^2*real_part(cos_inte
gral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2
- a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)
^2*tan(1/2*e)^2*tan(e)^2 + 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(c*f/d)^2
*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - 2*a^2*imag_part(cos_integral(2*f*
x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e) + 2*a^2*ima
g_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/
2*e)^2*tan(e) - 4*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*
c*f/d)^2*tan(1/2*e)^2*tan(e) - 8*a^2*real_part(cos_integral(f*x + c*f/d))*t
an(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)*tan(e)^2 - 8*a^2*real_part(cos_inte
gral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)*tan(e)^2 + 8*a
^2*real_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2
*e)^2*tan(e)^2 + 8*a^2*real_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*t
an(1/2*c*f/d)*tan(1/2*e)^2*tan(e)^2 + 2*a^2*imag_part(cos_integral(2*f*x +
2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - 2*a^2*imag_pa
rt(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2
*tan(e)^2 + 4*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)*tan(1/2*c*f/d)
```

^2*tan(1/2*e)^2*tan(e)^2 + 4*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 4*a^2*imag_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 6*a^2*log(abs(d*x + c))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + a^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 4*a^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e) - 4*a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e) - 4*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 + 4*a^2*imag_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 + 6*a^2*log(abs(d*x + c))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 - a^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 - a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 - 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 + 16*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 - 16*a^2*imag_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 + 32*a^2*sin_integral((d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 - 4*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 4*a^2*imag_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 6*a^2*log(abs(d*x + c))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - a^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 4*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - 4*a^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 6*a^2*log(abs(d*x + c))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + a^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - 8*a^2*real_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e) - 8*a^2*real_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e) + 8*a^2*real_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e)^2 + 8*a^2*real_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e)^2 - 2*a^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*a^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 4*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*a^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e) + 2*a^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e) - 4*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e) - 2*a^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e) + 2

```
*a^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2*ta
n(e) - 4*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*e)^2*tan(
e) + 2*a^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*c*f/d)^2*tan(1/
2*e)^2*tan(e) - 2*a^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*c*f
/d)^2*tan(1/2*e)^2*tan(e) + 4*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan(1/2*c
*f/d)^2*tan(1/2*e)^2*tan(e) - 8*a^2*real_part(cos_integral(f*x + c*f/d))*ta
n(c*f/d)^2*tan(1/2*c*f/d)*tan(e)^2 - 8*a^2*real_part(cos_integral(-f*x - c*
f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(e)^2 + 2*a^2*imag_part(cos_integral(2
*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(e)^2 - 2*a^2*imag_part(cos
_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(e)^2 + 4*a^2*s
in_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(e)^2 + 8*a^2
*real_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*e)*tan(e)^2 + 8*
a^2*real_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*e)*tan(e)^2
- 8*a^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)*ta
n(e)^2 - 8*a^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1
/2*e)*tan(e)^2 + 2*a^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)*
tan(1/2*e)^2*tan(e)^2 - 2*a^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan
(c*f/d)*tan(1/2*e)^2*tan(e)^2 + 4*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c
*f/d)*tan(1/2*e)^2*tan(e)^2 + 8*a^2*real_part(cos_integral(f*x + c*f/d))*ta
n(1/2*c*f/d)*tan(1/2*e)^2*tan(e)^2 + 8*a^2*real_part(cos_integral(-f*x - c*
f/d))*tan(1/2*c*f/d)*tan(1/2*e)^2*tan(e)^2 - 4*a^2*imag_part(cos_integral(f
*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2 + 4*a^2*imag_part(cos_integral(-
f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2 + 6*a^2*log(abs(d*x + c))*tan(c
*f/d)^2*tan(1/2*c*f/d)^2 + a^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan
(c*f/d)^2*tan(1/2*c*f/d)^2 + a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*
tan(c*f/d)^2*tan(1/2*c*f/d)^2 - 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(c*f
/d)^2*tan(1/2*c*f/d)^2 + 16*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(c*
f/d)^2*tan(1/2*c*f/d)*tan(1/2*e) - 16*a^2*imag_part(cos_integral(-f*x - c*f
/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e) + 32*a^2*sin_integral((d*f*x +
c*f)/d)*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e) - 4*a^2*imag_part(cos_integr
al(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2 + 4*a^2*imag_part(cos_integral(-
f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2 + 6*a^2*log(abs(d*x + c))*tan(c*f/d
)^2*tan(1/2*e)^2 + a^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^
2*tan(1/2*e)^2 + a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2
*tan(1/2*e)^2 - 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*e)
^2 + 4*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)
^2 - 4*a^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e
)^2 + 6*a^2*log(abs(d*x + c))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - a^2*real_part
(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - a^2*real_pa
rt(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 8*a^2*si
n_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 4*a^2*real_part
(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(e) - 4*a^2*
real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(e
) - 4*a^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*e)^2*
tan(e) - 4*a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2
```

*e)^2*tan(e) + 4*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(
e)^2 - 4*a^2*imag_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(e)^2 +
6*a^2*log(abs(d*x + c))*tan(c*f/d)^2*tan(e)^2 - a^2*real_part(cos_integral(
2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(e)^2 - a^2*real_part(cos_integral(-2*f*x
 - 2*c*f/d))*tan(c*f/d)^2*tan(e)^2 + 8*a^2*sin_integral((d*f*x + c*f)/d)*ta
n(c*f/d)^2*tan(e)^2 - 4*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*
f/d)^2*tan(e)^2 + 4*a^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d
)^2*tan(e)^2 + 6*a^2*log(abs(d*x + c))*tan(1/2*c*f/d)^2*tan(e)^2 + a^2*real
_part(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*c*f/d)^2*tan(e)^2 + a^2*real_p
art(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*c*f/d)^2*tan(e)^2 - 8*a^2*sin_i
ntegral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(e)^2 + 16*a^2*imag_part(cos_i
ntegral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 - 16*a^2*imag_part
(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 + 32*a^2*si
n_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 - 4*a^2*imag
_part(cos_integral(f*x + c*f/d))*tan(1/2*e)^2*tan(e)^2 + 4*a^2*imag_part(co
s_integral(-f*x - c*f/d))*tan(1/2*e)^2*tan(e)^2 + 6*a^2*log(abs(d*x + c))*t
an(1/2*e)^2*tan(e)^2 + a^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(1/2
*e)^2*tan(e)^2 + a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*e)^2
*tan(e)^2 - 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*e)^2*tan(e)^2 - 8*a
^2*real_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d) - 8*a^2
*real_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d) - 2*a^2*
imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2 + 2*a^
2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2 - 4
*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)*tan(1/2*c*f/d)^2 + 8*a^2*re
al_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*e) + 8*a^2*real_par
t(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*e) - 8*a^2*real_part(cos
_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e) - 8*a^2*real_part(cos_i
ntegral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e) - 2*a^2*imag_part(cos_in
tegral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*e)^2 + 2*a^2*imag_part(cos_inte
gral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*e)^2 - 4*a^2*sin_integral(2*(d*f
*x + c*f)/d)*tan(c*f/d)*tan(1/2*e)^2 + 8*a^2*real_part(cos_integral(f*x + c
*f/d))*tan(1/2*c*f/d)*tan(1/2*e)^2 + 8*a^2*real_part(cos_integral(-f*x - c*
f/d))*tan(1/2*c*f/d)*tan(1/2*e)^2 - 2*a^2*imag_part(cos_integral(2*f*x + 2*
c*f/d))*tan(c*f/d)^2*tan(e) + 2*a^2*imag_part(cos_integral(-2*f*x - 2*c*f/d
))*tan(c*f/d)^2*tan(e) - 4*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)^2
*tan(e) + 2*a^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*c*f/d)^2*t
an(e) - 2*a^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*c*f/d)^2*ta
n(e) + 4*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(e) + 2*a^
2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*e)^2*tan(e) - 2*a^2*imag
_part(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*e)^2*tan(e) + 4*a^2*sin_integ
ral(2*(d*f*x + c*f)/d)*tan(1/2*e)^2*tan(e) + 2*a^2*imag_part(cos_integral(2
*f*x + 2*c*f/d))*tan(c*f/d)*tan(e)^2 - 2*a^2*imag_part(cos_integral(-2*f*x
 - 2*c*f/d))*tan(c*f/d)*tan(e)^2 + 4*a^2*sin_integral(2*(d*f*x + c*f)/d)*tan
(c*f/d)*tan(e)^2 - 8*a^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d
)*tan(e)^2 - 8*a^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan

```
(e)^2 + 8*a^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*e)*tan(e)^2 + 8*
a^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*e)*tan(e)^2 + 4*a^2*imag_
part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2 - 4*a^2*imag_part(cos_integral
(-f*x - c*f/d))*tan(c*f/d)^2 + 6*a^2*log(abs(d*x + c))*tan(c*f/d)^2 + a^2*r
eal_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2 + a^2*real_part(cos_in
tegral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2 + 8*a^2*sin_integral((d*f*x + c*f)/d
)*tan(c*f/d)^2 - 4*a^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^
2 + 4*a^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2 + 6*a^2*lo
g(abs(d*x + c))*tan(1/2*c*f/d)^2 - a^2*real_part(cos_integral(2*f*x + 2*c*f
/d))*tan(1/2*c*f/d)^2 - a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(1
/2*c*f/d)^2 - 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2 + 16*a^2
*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) - 16*a^2*im
ag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) + 32*a^2*sin_
integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/2*e) - 4*a^2*imag_part(cos_i
ntegral(f*x + c*f/d))*tan(1/2*e)^2 + 4*a^2*imag_part(cos_integral(-f*x - c*
f/d))*tan(1/2*e)^2 + 6*a^2*log(abs(d*x + c))*tan(1/2*e)^2 - a^2*real_part(c
os_integral(2*f*x + 2*c*f/d))*tan(1/2*e)^2 - a^2*real_part(cos_integral(-2*
f*x - 2*c*f/d))*tan(1/2*e)^2 - 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*
e)^2 - 4*a^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(e) - 4
*a^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(e) + 4*a^2*im
ag_part(cos_integral(f*x + c*f/d))*tan(e)^2 - 4*a^2*imag_part(cos_integral(
-f*x - c*f/d))*tan(e)^2 + 6*a^2*log(abs(d*x + c))*tan(e)^2 + a^2*real_part(
cos_integral(2*f*x + 2*c*f/d))*tan(e)^2 + a^2*real_part(cos_integral(-2*f*x
 - 2*c*f/d))*tan(e)^2 + 8*a^2*sin_integral((d*f*x + c*f)/d)*tan(e)^2 - 2*a^
2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d) + 2*a^2*imag_part(cos
_integral(-2*f*x - 2*c*f/d))*tan(c*f/d) - 4*a^2*sin_integral(2*(d*f*x + c*f
)/d)*tan(c*f/d) - 8*a^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)
 - 8*a^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d) + 8*a^2*real_
part(cos_integral(f*x + c*f/d))*tan(1/2*e) + 8*a^2*real_part(cos_integral(-
f*x - c*f/d))*tan(1/2*e) + 2*a^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*t
an(e) - 2*a^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(e) + 4*a^2*sin_
integral(2*(d*f*x + c*f)/d)*tan(e) + 4*a^2*imag_part(cos_integral(f*x + c*f
/d)) - 4*a^2*imag_part(cos_integral(-f*x - c*f/d)) + 6*a^2*log(abs(d*x + c)
) - a^2*real_part(cos_integral(2*f*x + 2*c*f/d)) - a^2*real_part(cos_integr
al(-2*f*x - 2*c*f/d)) + 8*a^2*sin_integral((d*f*x + c*f)/d))/(d*tan(c*f/d)^
2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + d*tan(c*f/d)^2*tan(1/2*c*f/d)^2*
tan(1/2*e)^2 + d*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 + d*tan(c*f/d)^2*ta
n(1/2*e)^2*tan(e)^2 + d*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + d*tan(c*f/
d)^2*tan(1/2*c*f/d)^2 + d*tan(c*f/d)^2*tan(1/2*e)^2 + d*tan(1/2*c*f/d)^2*ta
n(1/2*e)^2 + d*tan(c*f/d)^2*tan(e)^2 + d*tan(1/2*c*f/d)^2*tan(e)^2 + d*tan(
1/2*e)^2*tan(e)^2 + d*tan(c*f/d)^2 + d*tan(1/2*c*f/d)^2 + d*tan(1/2*e)^2 +
d*tan(e)^2 + d)
```

maple [A] time = 0.05, size = 192, normalized size = 1.32

$$\frac{3a^2\ln\left(\left(fx+e\right)d+cf-de\right)}{2d}-\frac{a^2\,\mathrm{Si}\left(2fx+2e+\frac{2cf-2de}{d}\right)\sin\left(\frac{2cf-2de}{d}\right)}{2d}-\frac{a^2\,\mathrm{Ci}\left(2fx+2e+\frac{2cf-2de}{d}\right)\cos\left(\frac{2cf-2de}{d}\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 3/2*a^2*ln((f*x+e)*d+c*f-d*e)/d-1/2*a^2*Si(2*f*x+2*e+2*(c*f-d*e)/d)*sin(2*(
c*f-d*e)/d)/d-1/2*a^2*Ci(2*f*x+2*e+2*(c*f-d*e)/d)*cos(2*(c*f-d*e)/d)/d+2*a^
2*Si(f*x+e+(c*f-d*e)/d)*cos((c*f-d*e)/d)/d-2*a^2*Ci(f*x+e+(c*f-d*e)/d)*sin(
(c*f-d*e)/d)/d
```

maxima [C] time = 0.72, size = 335, normalized size = 2.31

$$\frac{\frac{4\,a^2 f\log\left(c+\frac{\left(fx+e\right)d}{f}-\frac{de}{f}\right)}{d}+\frac{4\left(f\left(-i\,E_1\left(\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)+i\,E_1\left(-\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f\left(E_1\left(\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)+E_1\left(-\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)\right)}{d}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*(4*a^2*f*log(c + (f*x + e)*d/f - d*e/f)/d + 4*(f*(-I*exp_integral_e(1,
(I*(f*x + e)*d - I*d*e + I*c*f)/d) + I*exp_integral_e(1, -(I*(f*x + e)*d -
I*d*e + I*c*f)/d))*cos(-(d*e - c*f)/d) + f*(exp_integral_e(1, (I*(f*x + e)*
d - I*d*e + I*c*f)/d) + exp_integral_e(1, -(I*(f*x + e)*d - I*d*e + I*c*f)/
d))*sin(-(d*e - c*f)/d))*a^2/d + (f*(exp_integral_e(1, (2*I*(f*x + e)*d - 2
*I*d*e + 2*I*c*f)/d) + exp_integral_e(1, -(2*I*(f*x + e)*d - 2*I*d*e + 2*I*
c*f)/d))*cos(-2*(d*e - c*f)/d) + f*(I*exp_integral_e(1, (2*I*(f*x + e)*d -
2*I*d*e + 2*I*c*f)/d) - I*exp_integral_e(1, -(2*I*(f*x + e)*d - 2*I*d*e + 2
*I*c*f)/d))*sin(-2*(d*e - c*f)/d) + 2*f*log((f*x + e)*d - d*e + c*f))*a^2/d
)/f
```

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

$$\int \frac{{\left(a+a\,\sin\left(e+f\,x\right)\right)}^2}{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + a*sin(e + f*x))^2/(c + d*x), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a**2*(Integral(2*sin(e + f*x)/(c + d*x), x) + Integral(sin(e + f*x)**2/(c +
 d*x), x) + Integral(1/(c + d*x), x))
```

3.105 $\int \frac{(a+a\sin(e+fx))^2}{(c+dx)^2}\,dx$

Optimal. Leaf size=162

$$\frac{a^2 f\mathrm{Ci}\left(2xf+\frac{2cf}{d}\right)\sin\left(2e-\frac{2cf}{d}\right)}{d^2}+\frac{2a^2 f\mathrm{Ci}\left(xf+\frac{cf}{d}\right)\cos\left(e-\frac{cf}{d}\right)}{d^2}-\frac{2a^2 f\sin\left(e-\frac{cf}{d}\right)\mathrm{Si}\left(xf+\frac{cf}{d}\right)}{d^2}+\frac{a^2 f\cos\left(2e-\right.}{}$$

```
[Out] 2*a^2*f*Ci(c*f/d+f*x)*cos(-e+c*f/d)/d^2+a^2*f*cos(-2*e+2*c*f/d)*Si(2*c*f/d+
2*f*x)/d^2-a^2*f*Ci(2*c*f/d+2*f*x)*sin(-2*e+2*c*f/d)/d^2+2*a^2*f*Si(c*f/d+f
*x)*sin(-e+c*f/d)/d^2-4*a^2*sin(1/2*e+1/4*Pi+1/2*f*x)^4/d/(d*x+c)
```

Rubi [A] time = 0.33, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3318, 3313, 3303, 3299, 3302}

$$\frac{a^2 f\,\mathrm{CosIntegral}\left(\frac{2cf}{d}+2fx\right)\sin\left(2e-\frac{2cf}{d}\right)}{d^2}+\frac{2a^2 f\,\mathrm{CosIntegral}\left(\frac{cf}{d}+fx\right)\cos\left(e-\frac{cf}{d}\right)}{d^2}-\frac{2a^2 f\sin\left(e-\frac{cf}{d}\right)\mathrm{Si}\left(xf\right.}{d^2}$$

Antiderivative was successfully verified.

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

```
[Out] (2*a^2*f*Cos[e - (c*f)/d]*CosIntegral[(c*f)/d + f*x])/d^2 + (a^2*f*CosInteg
ral[(2*c*f)/d + 2*f*x]*Sin[2*e - (2*c*f)/d])/d^2 - (4*a^2*Sin[e/2 + Pi/4 +
(f*x)/2]^4)/(d*(c + d*x)) - (2*a^2*f*Sin[e - (c*f)/d]*SinIntegral[(c*f)/d +
 f*x])/d^2 + (a^2*f*Cos[2*e - (2*c*f)/d]*SinIntegral[(2*c*f)/d + 2*f*x])/d^
2
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
```

```
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3318

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

Rubi steps

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

$$= -\frac{4a^2\sin^4\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)}+\frac{\left(8a^2f\right)\int\left(\frac{\cos(e+fx)}{4(c+dx)}+\frac{\sin(2e+2fx)}{8(c+dx)}\right)dx}{d}$$

$$= -\frac{4a^2\sin^4\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)}+\frac{\left(a^2f\right)\int\frac{\sin(2e+2fx)}{c+dx}\,dx}{d}+\frac{\left(2a^2f\right)\int\frac{\cos(e+fx)}{c+dx}\,dx}{d}$$

$$= -\frac{4a^2\sin^4\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)}+\frac{\left(a^2f\cos\left(2e-\frac{2cf}{d}\right)\right)\int\frac{\sin\left(\frac{2cf}{d}+2fx\right)}{c+dx}\,dx}{d}+\frac{\left(2a^2f\cos\left(e-\frac{cf}{d}\right.\right.}{}$$

$$= \frac{2a^2f\cos\left(e-\frac{cf}{d}\right)\mathrm{Ci}\left(\frac{cf}{d}+fx\right)}{d^2}+\frac{a^2f\mathrm{Ci}\left(\frac{2cf}{d}+2fx\right)\sin\left(2e-\frac{2cf}{d}\right)}{d^2}-\frac{4a^2\sin^4\left(\frac{e}{2}+\right.}{d(c+dx}$$

Mathematica [A] time = 0.63, size = 206, normalized size = 1.27

$$\frac{a^2\left(2f(c+dx)\mathrm{Ci}\left(\frac{2f(c+dx)}{d}\right)\sin\left(2e-\frac{2cf}{d}\right)+4f(c+dx)\mathrm{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\cos\left(e-\frac{cf}{d}\right)-4dfx\sin\left(e-\frac{cf}{d}\right)\mathrm{Si}\left(f\left(\frac{c}{d}+x\right.\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (a^2*(-3*d + d*Cos[2*(e + f*x)] + 4*f*(c + d*x)*Cos[e - (c*f)/d]*CosIntegra
l[f*(c/d + x)] + 2*f*(c + d*x)*CosIntegral[(2*f*(c + d*x))/d]*Sin[2*e - (2*
c*f)/d] - 4*d*Sin[e + f*x] - 4*c*f*Sin[e - (c*f)/d]*SinIntegral[f*(c/d + x)
] - 4*d*f*x*Sin[e - (c*f)/d]*SinIntegral[f*(c/d + x)] + 2*c*f*Cos[2*e - (2*
c*f)/d]*SinIntegral[(2*f*(c + d*x))/d] + 2*d*f*x*Cos[2*e - (2*c*f)/d]*SinIn
tegral[(2*f*(c + d*x))/d]))/(2*d^2*(c + d*x))
```

fricas [A] time = 0.70, size = 284, normalized size = 1.75

$$\frac{2\,a^2 d\cos\left(fx+e\right)^2 - 4\,a^2 d\sin\left(fx+e\right) - 4\,a^2 d + 2\left(a^2 dfx + a^2 cf\right)\cos\left(-\frac{2\left(de-cf\right)}{d}\right)\mathrm{Si}\left(\frac{2\left(dfx+cf\right)}{d}\right) + 4\left(a^2 dfx + \cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*a^2*d*cos(f*x + e)^2 - 4*a^2*d*sin(f*x + e) - 4*a^2*d + 2*(a^2*d*f*x
 + a^2*c*f)*cos(-2*(d*e - c*f)/d)*sin_integral(2*(d*f*x + c*f)/d) + 4*(a^2*
d*f*x + a^2*c*f)*sin(-(d*e - c*f)/d)*sin_integral((d*f*x + c*f)/d) + 2*((a^
2*d*f*x + a^2*c*f)*cos_integral((d*f*x + c*f)/d) + (a^2*d*f*x + a^2*c*f)*co
s_integral(-(d*f*x + c*f)/d))*cos(-(d*e - c*f)/d) - ((a^2*d*f*x + a^2*c*f)*
cos_integral(2*(d*f*x + c*f)/d) + (a^2*d*f*x + a^2*c*f)*cos_integral(-2*(d*
f*x + c*f)/d))*sin(-2*(d*e - c*f)/d))/(d^3*x + c*d^2)
```

giac [B] time = 0.78, size = 1134, normalized size = 7.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
al(-2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e*sin(
2*(c*f - d*e)/d) + 4*(d*x + c)*a^2*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*
sin((c*f - d*e)/d)*sin_integral(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x +
 c)) - c*f + d*e)/d) - 4*a^2*c*f^3*sin((c*f - d*e)/d)*sin_integral(-((d*x +
 c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d) + 4*a^2*d*f^2*e*sin
((c*f - d*e)/d)*sin_integral(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)
) - c*f + d*e)/d) + 2*(d*x + c)*a^2*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2
*cos(2*(c*f - d*e)/d)*sin_integral(-2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(
d*x + c)) - c*f + d*e)/d) - 2*a^2*c*f^3*cos(2*(c*f - d*e)/d)*sin_integral(-
2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d) + 2*a^2*d*
f^2*cos(2*(c*f - d*e)/d)*e*sin_integral(-2*((d*x + c)*(c*f/(d*x + c) - f -
d*e/(d*x + c)) - c*f + d*e)/d) - a^2*d*f^2*cos(2*(d*x + c)*(c*f/(d*x + c) -
 f - d*e/(d*x + c))/d) - 4*a^2*d*f^2*sin((d*x + c)*(c*f/(d*x + c) - f - d*e
/(d*x + c))/d) + 3*a^2*d*f^2)*d^2/(((d*x + c)*d^4*(c*f/(d*x + c) - f - d*e/
(d*x + c)) - c*d^4*f + d^5*e)*f)
```

maple [A] time = 0.05, size = 274, normalized size = 1.69

$$\frac{-\frac{3a^2f^2}{2\left(\left(fx+e\right)d+cf-de\right)d} - \frac{a^2f^2\left(-\frac{2\cos\left(2fx+2e\right)}{\left(\left(fx+e\right)d+cf-de\right)d} - \frac{2\left(\frac{2\,\mathrm{Si}\left(2fx+2e+\frac{2cf-2de}{d}\right)\cos\left(\frac{2cf-2de}{d}\right)}{d} - \frac{2\,\mathrm{Ci}\left(2fx+2e+\frac{2cf-2de}{d}\right)\sin\left(\frac{2cf-2de}{d}\right)}{d}\right)}{d}\right)}{4} + 2a^2f^2\left(-\frac{\sin\left(f\ldots\right.}{\left(\left(fx+e\right)d+\ldots\right.}\right.\ldots}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/f*(-3/2*a^2*f^2/((f*x+e)*d+c*f-d*e)/d-1/4*a^2*f^2*(-2*cos(2*f*x+2*e)/((f*
x+e)*d+c*f-d*e)/d-2*(2*Si(2*f*x+2*e+2*(c*f-d*e)/d)*cos(2*(c*f-d*e)/d)/d-2*C
i(2*f*x+2*e+2*(c*f-d*e)/d)*sin(2*(c*f-d*e)/d)/d)/d)+2*a^2*f^2*(-sin(f*x+e)/
((f*x+e)*d+c*f-d*e)/d+(Si(f*x+e+(c*f-d*e)/d)*sin((c*f-d*e)/d)/d+Ci(f*x+e+(c
*f-d*e)/d)*cos((c*f-d*e)/d)/d)/d))
```

maxima [C] time = 0.61, size = 370, normalized size = 2.28

$$-\frac{\frac{64\,a^2f^2}{\left(fx+e\right)d^2-d^2e+cdf} - \frac{64\left(f^2\left(-i\,E_2\left(\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)+i\,E_2\left(-\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f^2\left(E_2\left(\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)+E_2\left(-\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)\right)\mathrm{si}\ldots\right.}{\left(fx+e\right)d^2-d^2e+cdf}\ldots}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/64*(64*a^2*f^2/((f*x + e)*d^2 - d^2*e + c*d*f) - 64*(f^2*(-I*exp_integra
l_e(2, (I*(f*x + e)*d - I*d*e + I*c*f)/d) + I*exp_integral_e(2, -(I*(f*x +
e)*d - I*d*e + I*c*f)/d))*cos(-(d*e - c*f)/d) + f^2*(exp_integral_e(2, (I*(
f*x + e)*d - I*d*e + I*c*f)/d) + exp_integral_e(2, -(I*(f*x + e)*d - I*d*e
+ I*c*f)/d))*sin(-(d*e - c*f)/d))*a^2/((f*x + e)*d^2 - d^2*e + c*d*f) - (16
*f^2*(exp_integral_e(2, (2*I*(f*x + e)*d - 2*I*d*e + 2*I*c*f)/d) + exp_inte
gral_e(2, -(2*I*(f*x + e)*d - 2*I*d*e + 2*I*c*f)/d))*cos(-2*(d*e - c*f)/d)
+ f^2*(16*I*exp_integral_e(2, (2*I*(f*x + e)*d - 2*I*d*e + 2*I*c*f)/d) - 16
*I*exp_integral_e(2, -(2*I*(f*x + e)*d - 2*I*d*e + 2*I*c*f)/d))*sin(-2*(d*e
 - c*f)/d) - 32*f^2)*a^2/((f*x + e)*d^2 - d^2*e + c*d*f))/f
```

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

$$\int \frac{\left(a + a\,\sin\left(e + f\,x\right)\right)^2}{\left(c + d\,x\right)^2} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + a*sin(e + f*x))^2/(c + d*x)^2, x)
```

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

$$a^2\left(\int \frac{2\sin\left(e + fx\right)}{c^2 + 2cdx + d^2x^2}\,dx + \int \frac{\sin^2\left(e + fx\right)}{c^2 + 2cdx + d^2x^2}\,dx + \int \frac{1}{c^2 + 2cdx + d^2x^2}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a**2*(Integral(2*sin(e + f*x)/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(s
in(e + f*x)**2/(c**2 + 2*c*d*x + d**2*x**2), x) + Integral(1/(c**2 + 2*c*d*
x + d**2*x**2), x))
```

3.106 $\int \frac{(a+a\sin(e+fx))^2}{(c+dx)^3}\,dx$

Optimal. Leaf size=225

$$-\frac{a^2f^2\text{Ci}\left(xf+\frac{cf}{d}\right)\sin\left(e-\frac{cf}{d}\right)}{d^3}+\frac{a^2f^2\text{Ci}\left(2xf+\frac{2cf}{d}\right)\cos\left(2e-\frac{2cf}{d}\right)}{d^3}-\frac{a^2f^2\sin\left(2e-\frac{2cf}{d}\right)\text{Si}\left(2xf+\frac{2cf}{d}\right)}{d^3}-\frac{a^2f^2\cos}{}$$

```
[Out] a^2*f^2*Ci(2*c*f/d+2*f*x)*cos(-2*e+2*c*f/d)/d^3-a^2*f^2*cos(-e+c*f/d)*Si(c*
f/d+f*x)/d^3+a^2*f^2*Si(2*c*f/d+2*f*x)*sin(-2*e+2*c*f/d)/d^3+a^2*f^2*Ci(c*f
/d+f*x)*sin(-e+c*f/d)/d^3-4*a^2*f*cos(1/2*e+1/4*Pi+1/2*f*x)*sin(1/2*e+1/4*P
i+1/2*f*x)^3/d^2/(d*x+c)-2*a^2*sin(1/2*e+1/4*Pi+1/2*f*x)^4/d/(d*x+c)^2
```

Rubi [A] time = 0.51, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {3318, 3314, 3309, 31, 3303, 3299, 3302, 3312}

$$-\frac{a^2f^2\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d^3}+\frac{a^2f^2\text{CosIntegral}\left(\frac{2cf}{d}+2fx\right)\cos\left(2e-\frac{2cf}{d}\right)}{d^3}-\frac{a^2f^2\sin\left(2e-\frac{2cf}{d}\right)\text{Si}\left(\right.}{d^3}$$

Antiderivative was successfully verified.

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

```
[Out] (a^2*f^2*Cos[2*e - (2*c*f)/d]*CosIntegral[(2*c*f)/d + 2*f*x])/d^3 - (a^2*f^
2*CosIntegral[(c*f)/d + f*x]*Sin[e - (c*f)/d])/d^3 - (4*a^2*f*Cos[e/2 + Pi/
4 + (f*x)/2]*Sin[e/2 + Pi/4 + (f*x)/2]^3)/(d^2*(c + d*x)) - (2*a^2*Sin[e/2
+ Pi/4 + (f*x)/2]^4)/(d*(c + d*x)^2) - (a^2*f^2*Cos[e - (c*f)/d]*SinIntegra
l[(c*f)/d + f*x])/d^3 - (a^2*f^2*Sin[2*e - (2*c*f)/d]*SinIntegral[(2*c*f)/d
 + 2*f*x])/d^3
```

Rule 31

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

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
```

```
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3309

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + ((f_.)*(x_))/2]^2, x_Symbol] :>
Dist[1/2, Int[(c + d*x)^m, x], x] - Dist[1/2, Int[(c + d*x)^m*Cos[2*e + f*x
], x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3318

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

Rubi steps

$$\int \frac{(a+a\sin(e+fx))^2}{(c+dx)^3}\,dx = \left(4a^2\right)\int \frac{\sin^4\left(\frac{1}{2}\left(e+\frac{\pi}{2}\right)+\frac{fx}{2}\right)}{(c+dx)^3}\,dx$$

$$= -\frac{4a^2f\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{d^2(c+dx)} - \frac{2a^2\sin^4\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)^2} + \frac{\left(6a^2f^2\right)\int \frac{\sin}{}}{d}$$

$$= -\frac{4a^2f\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{d^2(c+dx)} - \frac{2a^2\sin^4\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)^2} + \frac{\left(3a^2f^2\right)\int \frac{1}{c+}}{d^2}$$

$$= -\frac{4a^2f\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{d^2(c+dx)} - \frac{2a^2\sin^4\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{d(c+dx)^2} + \frac{\left(a^2f^2\right)\int \frac{\cos(2}{c}}{d^2}$$

$$= \frac{3a^2f^2\text{Ci}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d^3} - \frac{4a^2f\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{d^2(c+dx)} - \frac{2a^2\sin}{}$$

$$= \frac{a^2f^2\cos\left(2e-\frac{2cf}{d}\right)\text{Ci}\left(\frac{2cf}{d}+2fx\right)}{d^3} - \frac{a^2f^2\text{Ci}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d^3} - \frac{4a^2f\cos\left(\frac{e}{2}+\right.}{}$$

Mathematica [A] time = 1.02, size = 353, normalized size = 1.57

$$-\frac{a^2\left(4c^2f^2\sin\left(2e-\frac{2cf}{d}\right)\text{Si}\left(\frac{2f(c+dx)}{d}\right)+4c^2f^2\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(f\left(\frac{c}{d}+x\right)\right)+4f^2(c+dx)^2\text{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\sin\left(e-\frac{cf}{d}\right.\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] -1/4*(a^2*(3*d^2 + 4*c*d*f*Cos[e + f*x] + 4*d^2*f*x*Cos[e + f*x] - d^2*Cos[
2*(e + f*x)] - 4*f^2*(c + d*x)^2*Cos[2*e - (2*c*f)/d]*CosIntegral[(2*f*(c +
 d*x))/d] + 4*f^2*(c + d*x)^2*CosIntegral[f*(c/d + x)]*Sin[e - (c*f)/d] + 4
*d^2*Sin[e + f*x] + 2*c*d*f*Sin[2*(e + f*x)] + 2*d^2*f*x*Sin[2*(e + f*x)] +
 4*c^2*f^2*Cos[e - (c*f)/d]*SinIntegral[f*(c/d + x)] + 8*c*d*f^2*x*Cos[e -
(c*f)/d]*SinIntegral[f*(c/d + x)] + 4*d^2*f^2*x^2*Cos[e - (c*f)/d]*SinInteg
ral[f*(c/d + x)] + 4*c^2*f^2*Sin[2*e - (2*c*f)/d]*SinIntegral[(2*f*(c + d*x
))/d] + 8*c*d*f^2*x*Sin[2*e - (2*c*f)/d]*SinIntegral[(2*f*(c + d*x))/d] + 4
*d^2*f^2*x^2*Sin[2*e - (2*c*f)/d]*SinIntegral[(2*f*(c + d*x))/d]))/(d^3*(c
+ d*x)^2)
```

fricas [B] time = 0.86, size = 475, normalized size = 2.11

$$a^2d^2\cos\left(fx+e\right)^2-2\,a^2d^2+2\left(a^2d^2f^2x^2+2\,a^2cdf^2x+a^2c^2f^2\right)\sin\left(-\frac{2\left(de-cf\right)}{d}\right)\mathrm{Si}\left(\frac{2\left(dfx+cf\right)}{d}\right)-2\left(a^2d^2f^2x^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(a^2*d^2*cos(f*x + e)^2 - 2*a^2*d^2 + 2*(a^2*d^2*f^2*x^2 + 2*a^2*c*d*f^
2*x + a^2*c^2*f^2)*sin(-2*(d*e - c*f)/d)*sin_integral(2*(d*f*x + c*f)/d) -
2*(a^2*d^2*f^2*x^2 + 2*a^2*c*d*f^2*x + a^2*c^2*f^2)*cos(-(d*e - c*f)/d)*sin
_integral((d*f*x + c*f)/d) - 2*(a^2*d^2*f*x + a^2*c*d*f)*cos(f*x + e) + ((a
^2*d^2*f^2*x^2 + 2*a^2*c*d*f^2*x + a^2*c^2*f^2)*cos_integral(2*(d*f*x + c*f
)/d) + (a^2*d^2*f^2*x^2 + 2*a^2*c*d*f^2*x + a^2*c^2*f^2)*cos_integral(-2*(d
*f*x + c*f)/d))*cos(-2*(d*e - c*f)/d) - 2*(a^2*d^2 + (a^2*d^2*f*x + a^2*c*d
*f)*cos(f*x + e))*sin(f*x + e) + ((a^2*d^2*f^2*x^2 + 2*a^2*c*d*f^2*x + a^2*
c^2*f^2)*cos_integral((d*f*x + c*f)/d) + (a^2*d^2*f^2*x^2 + 2*a^2*c*d*f^2*x
 + a^2*c^2*f^2)*cos_integral(-(d*f*x + c*f)/d))*sin(-(d*e - c*f)/d))/(d^5*x
^2 + 2*c*d^4*x + c^2*d^3)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

maple [A] time = 0.05, size = 347, normalized size = 1.54

$$\frac{-\frac{3a^2f^3}{4\left(\left(fx+e\right)d+cf-de\right)^2d}-\frac{a^2f^3\left(-\frac{\cos\left(2fx+2e\right)}{\left(\left(fx+e\right)d+cf-de\right)^2d}-\frac{-\frac{2\sin\left(2fx+2e\right)}{\left(\left(fx+e\right)d+cf-de\right)d}+\frac{\frac{4\,\mathrm{Si}\left(2fx+2e+\frac{2cf-2de}{d}\right)\sin\left(\frac{2cf-2de}{d}\right)}{d}+\frac{4\,\mathrm{Ci}\left(2fx+2e+\frac{2cf-2de}{d}\right)\cos\left(\frac{2cf-2de}{d}\right)}{d}}{d}}{d}\right)}{4}+2}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [C] time = 1.09, size = 475, normalized size = 2.11

$$-\frac{\frac{32\,a^2 f^3}{\left(fx+e\right)^2 d^3+d^3e^2-2\,cd^2ef+c^2df^2-2\left(d^3e-cd^2f\right)\left(fx+e\right)}-\frac{64\left(f^3\left(-i\,E_3\left(\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)+i\,E_3\left(-\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f^3\left(E_3\left(\frac{i\left(fx+e\right)d-i}{d}\right.\right.\right.}{\left(fx+e\right)^2 d^3+d^3e^2-2\,cd^2ef+c^2df^2-2\left(d^3e-cd^2f\right)(}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/64*(32*a^2*f^3/((f*x + e)^2*d^3 + d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*
(d^3*e - c*d^2*f)*(f*x + e)) - 64*(f^3*(-I*exp_integral_e(3, (I*(f*x + e)*d
 - I*d*e + I*c*f)/d) + I*exp_integral_e(3, -(I*(f*x + e)*d - I*d*e + I*c*f)
/d))*cos(-(d*e - c*f)/d) + f^3*(exp_integral_e(3, (I*(f*x + e)*d - I*d*e +
I*c*f)/d) + exp_integral_e(3, -(I*(f*x + e)*d - I*d*e + I*c*f)/d))*sin(-(d*
e - c*f)/d))*a^2/((f*x + e)^2*d^3 + d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*(
d^3*e - c*d^2*f)*(f*x + e)) - (16*f^3*(exp_integral_e(3, (2*I*(f*x + e)*d -
 2*I*d*e + 2*I*c*f)/d) + exp_integral_e(3, -(2*I*(f*x + e)*d - 2*I*d*e + 2*
I*c*f)/d))*cos(-2*(d*e - c*f)/d) + f^3*(16*I*exp_integral_e(3, (2*I*(f*x +
e)*d - 2*I*d*e + 2*I*c*f)/d) - 16*I*exp_integral_e(3, -(2*I*(f*x + e)*d - 2
*I*d*e + 2*I*c*f)/d))*sin(-2*(d*e - c*f)/d) - 16*f^3)*a^2/((f*x + e)^2*d^3
+ d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*(d^3*e - c*d^2*f)*(f*x + e)))/f
```

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

$$\int \frac{{\left(a+a\,\sin\left(e+f\,x\right)\right)}^2}{{\left(c+d\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + a*sin(e + f*x))^2/(c + d*x)^3, x)
```

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

$$a^{2} \left(\int \frac{2 \sin{\left(e + f x \right)}}{c^{3} + 3 c^{2} d x + 3 c d^{2} x^{2} + d^{3} x^{3}}\, dx + \int \frac{\sin^{2}{\left(e + f x \right)}}{c^{3} + 3 c^{2} d x + 3 c d^{2} x^{2} + d^{3} x^{3}}\, dx + \int \frac{1}{c^{3} + 3 c^{2} d x + 3 c d^{2} x^{2} + d^{3} x^{3}}\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.107 $\int \frac{(c+dx)^3}{a+a\sin(e+fx)}\,dx$

Optimal. Leaf size=148

$$-\frac{12id^2(c+dx)\text{Li}_2\left(ie^{i(e+fx)}\right)}{af^3}+\frac{6d(c+dx)^2\log\left(1-ie^{i(e+fx)}\right)}{af^2}-\frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af}-\frac{i(c+dx)^3}{af}+\frac{12d^3\text{Li}_3\left(ie^{i\right.}}{af^4}$$

```
[Out] -I*(d*x+c)^3/a/f-(d*x+c)^3*cot(1/2*e+1/4*Pi+1/2*f*x)/a/f+6*d*(d*x+c)^2*ln(1
-I*exp(I*(f*x+e)))/a/f^2-12*I*d^2*(d*x+c)*polylog(2,I*exp(I*(f*x+e)))/a/f^3
+12*d^3*polylog(3,I*exp(I*(f*x+e)))/a/f^4
```

Rubi [A] time = 0.31, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {3318, 4184, 3717, 2190, 2531, 2282, 6589}

$$-\frac{12id^2(c+dx)\text{PolyLog}\left(2,ie^{i(e+fx)}\right)}{af^3}+\frac{12d^3\text{PolyLog}\left(3,ie^{i(e+fx)}\right)}{af^4}+\frac{6d(c+dx)^2\log\left(1-ie^{i(e+fx)}\right)}{af^2}-\frac{(c+dx)^3\cot\left(\frac{e}{2}\right.}{af}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3/(a + a*Sin[e + f*x]),x]
```

```
[Out] ((-I)*(c + d*x)^3)/(a*f) - ((c + d*x)^3*Cot[e/2 + Pi/4 + (f*x)/2])/(a*f) +
(6*d*(c + d*x)^2*Log[1 - I*E^(I*(e + f*x))])/(a*f^2) - ((12*I)*d^2*(c + d*x
)*PolyLog[2, I*E^(I*(e + f*x))])/(a*f^3) + (12*d^3*PolyLog[3, I*E^(I*(e + f
*x))])/(a*f^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

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

$$= -\frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{(3d)\int (c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)dx}{af}$$

$$= -\frac{i(c+dx)^3}{af}-\frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{(6d)\int \frac{e^{2i\left(\frac{e}{2}+\frac{fx}{2}\right)}(c+dx)^2}{1-ie^{2i\left(\frac{e}{2}+\frac{fx}{2}\right)}}dx}{af}$$

$$= -\frac{i(c+dx)^3}{af}-\frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{6d(c+dx)^2\log\left(1-ie^{i(e+fx)}\right)}{af^2}-\frac{\left(12d^2\right)\int(c}{}$$

$$= -\frac{i(c+dx)^3}{af}-\frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{6d(c+dx)^2\log\left(1-ie^{i(e+fx)}\right)}{af^2}-\frac{12id^2(c+d}{}$$

$$= -\frac{i(c+dx)^3}{af}-\frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{6d(c+dx)^2\log\left(1-ie^{i(e+fx)}\right)}{af^2}-\frac{12id^2(c+d}{}$$

$$= -\frac{i(c+dx)^3}{af}-\frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{6d(c+dx)^2\log\left(1-ie^{i(e+fx)}\right)}{af^2}-\frac{12id^2(c+d}{}$$

Mathematica [A] time = 1.19, size = 126, normalized size = 0.85

$$\frac{-12id^2f(c+dx)\text{Li}_2\left(ie^{i(e+fx)}\right)+f^2(c+dx)^2\left(f(c+dx)\tan\left(\frac{1}{4}(2e+2fx-\pi)\right)-if(c+dx)+6d\log\left(1-ie^{i(e+fx)}\right)\right.}{af^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3/(a + a*Sin[e + f*x]),x]
```

```
[Out] ((-12*I)*d^2*f*(c + d*x)*PolyLog[2, I*E^(I*(e + f*x))] + 12*d^3*PolyLog[3,
I*E^(I*(e + f*x))] + f^2*(c + d*x)^2*((-I)*f*(c + d*x) + 6*d*Log[1 - I*E^(I
*(e + f*x))] + f*(c + d*x)*Tan[(2*e - Pi + 2*f*x)/4]))/(a*f^4)
```

fricas [C] time = 0.89, size = 915, normalized size = 6.18

$$-\frac{d^3f^3x^3+3cd^2f^3x^2+3c^2df^3x+c^3f^3+\left(d^3f^3x^3+3cd^2f^3x^2+3c^2df^3x+c^3f^3\right)\cos\left(fx+e\right)-\left(-6id^3fx-6i\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(d^3*f^3*x^3 + 3*c*d^2*f^3*x^2 + 3*c^2*d*f^3*x + c^3*f^3 + (d^3*f^3*x^3 +
3*c*d^2*f^3*x^2 + 3*c^2*d*f^3*x + c^3*f^3)*cos(f*x + e) - (-6*I*d^3*f*x - 6
*I*c*d^2*f + (-6*I*d^3*f*x - 6*I*c*d^2*f)*cos(f*x + e) + (-6*I*d^3*f*x - 6*
I*c*d^2*f)*sin(f*x + e))*dilog(I*cos(f*x + e) - sin(f*x + e)) - (6*I*d^3*f*
x + 6*I*c*d^2*f + (6*I*d^3*f*x + 6*I*c*d^2*f)*cos(f*x + e) + (6*I*d^3*f*x +
 6*I*c*d^2*f)*sin(f*x + e))*dilog(-I*cos(f*x + e) - sin(f*x + e)) - 3*(d^3*
e^2 - 2*c*d^2*e*f + c^2*d*f^2 + (d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2)*cos(f*x
 + e) + (d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2)*sin(f*x + e))*log(cos(f*x + e)
+ I*sin(f*x + e) + I) - 3*(d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*
e*f + (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*cos(f*x + e) +
(d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*sin(f*x + e))*log(I*c
os(f*x + e) + sin(f*x + e) + 1) - 3*(d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2
+ 2*c*d^2*e*f + (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*cos(f
*x + e) + (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*sin(f*x + e
))*log(-I*cos(f*x + e) + sin(f*x + e) + 1) - 3*(d^3*e^2 - 2*c*d^2*e*f + c^2
*d*f^2 + (d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2)*cos(f*x + e) + (d^3*e^2 - 2*c*
d^2*e*f + c^2*d*f^2)*sin(f*x + e))*log(-cos(f*x + e) + I*sin(f*x + e) + I)
- 6*(d^3*cos(f*x + e) + d^3*sin(f*x + e) + d^3)*polylog(3, I*cos(f*x + e) -
 sin(f*x + e)) - 6*(d^3*cos(f*x + e) + d^3*sin(f*x + e) + d^3)*polylog(3, -
I*cos(f*x + e) - sin(f*x + e)) - (d^3*f^3*x^3 + 3*c*d^2*f^3*x^2 + 3*c^2*d*f
^3*x + c^3*f^3)*sin(f*x + e))/(a*f^4*cos(f*x + e) + a*f^4*sin(f*x + e) + a*
f^4)
```

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

$$\int \frac{(dx+c)^3}{a\sin\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^3/(a*sin(f*x + e) + a), x)
```

maple [B] time = 0.20, size = 484, normalized size = 3.27

$$-\frac{2\left(d^3x^3+3c\,d^2x^2+3c^2dx+c^3\right)}{fa\left(\mathrm{e}^{i\left(fx+e\right)}+i\right)}+\frac{6d^3e^2\ln\left(\mathrm{e}^{i\left(fx+e\right)}+i\right)}{a\,f^4}+\frac{12d^3\,\mathrm{polylog}\left(3,i\mathrm{e}^{i\left(fx+e\right)}\right)}{a\,f^4}+\frac{12c\,d^2e\ln\left(\mathrm{e}^{i\left(fx+e\right)}\right)}{a\,f^3}-\frac{6\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3/(a+a*sin(f*x+e)),x)
```

```
[Out] -2*(d^3*x^3+3*c*d^2*x^2+3*c^2*d*x+c^3)/f/a/(exp(I*(f*x+e))+I)+6/a/f^4*d^3*e
^2*ln(exp(I*(f*x+e))+I)+12*d^3*polylog(3,I*exp(I*(f*x+e)))/a/f^4+12/a/f^3*c
*d^2*e*ln(exp(I*(f*x+e)))-6/a/f^2*ln(exp(I*(f*x+e)))*c^2*d-12/a/f^3*c*d^2*e
*ln(exp(I*(f*x+e))+I)+6/a/f^2*d^3*ln(1-I*exp(I*(f*x+e)))*x^2-6/a/f^4*d^3*ln
(1-I*exp(I*(f*x+e)))*e^2+6/a/f^2*ln(exp(I*(f*x+e))+I)*c^2*d+4*I/a/f^4*d^3*e
^3-6*I/a/f^3*c*d^2*e^2-6/a/f^4*d^3*e^2*ln(exp(I*(f*x+e)))-12*I/a/f^3*d^3*po
lylog(2,I*exp(I*(f*x+e)))*x+6*I/a/f^3*d^3*e^2*x-6*I/a/f*c*d^2*x^2-2*I/a/f*d
^3*x^3-12*I/a/f^2*c*d^2*e*x-12*I/a/f^3*c*d^2*polylog(2,I*exp(I*(f*x+e)))+12
/a/f^2*c*d^2*ln(1-I*exp(I*(f*x+e)))*x+12/a/f^3*c*d^2*ln(1-I*exp(I*(f*x+e)))
*e
```

maxima [B] time = 0.70, size = 974, normalized size = 6.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (6*(2*(f*x + e)*cos(f*x + e) - (cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x
 + e) + 1)*log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1))*c*d^2
*e/(a*f^2*cos(f*x + e)^2 + a*f^2*sin(f*x + e)^2 + 2*a*f^2*sin(f*x + e) + a*
f^2) - 6*c*d^2*e^2/(a*f^2 + a*f^2*sin(f*x + e)/(cos(f*x + e) + 1)) - 3*(2*(
f*x + e)*cos(f*x + e) - (cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) +
 1)*log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1))*c^2*d/(a*f*c
os(f*x + e)^2 + a*f*sin(f*x + e)^2 + 2*a*f*sin(f*x + e) + a*f) + 6*c^2*d*e/
(a*f + a*f*sin(f*x + e)/(cos(f*x + e) + 1)) - 2*c^3/(a + a*sin(f*x + e)/(co
s(f*x + e) + 1)) + (-2*I*d^3*e^3 + (6*d^3*e^2*cos(f*x + e) + 6*I*d^3*e^2*si
n(f*x + e) + 6*I*d^3*e^2)*arctan2(sin(f*x + e) + 1, cos(f*x + e)) + (-6*I*(
f*x + e)^2*d^3 + (12*I*d^3*e - 12*I*c*d^2*f)*(f*x + e) - 6*((f*x + e)^2*d^3
 - 2*(d^3*e - c*d^2*f)*(f*x + e))*cos(f*x + e) + (-6*I*(f*x + e)^2*d^3 + (1
2*I*d^3*e - 12*I*c*d^2*f)*(f*x + e))*sin(f*x + e))*arctan2(cos(f*x + e), si
n(f*x + e) + 1) - 2*((f*x + e)^3*d^3 + 3*(f*x + e)*d^3*e^2 - 3*(d^3*e - c*d
^2*f)*(f*x + e)^2)*cos(f*x + e) + (-12*I*(f*x + e)*d^3 + 12*I*d^3*e - 12*I*
c*d^2*f - 12*((f*x + e)*d^3 - d^3*e + c*d^2*f)*cos(f*x + e) + (-12*I*(f*x +
 e)*d^3 + 12*I*d^3*e - 12*I*c*d^2*f)*sin(f*x + e))*dilog(I*e^(I*f*x + I*e))
 + (3*(f*x + e)^2*d^3 + 3*d^3*e^2 - 6*(d^3*e - c*d^2*f)*(f*x + e) + (-3*I*(
f*x + e)^2*d^3 - 3*I*d^3*e^2 + (6*I*d^3*e - 6*I*c*d^2*f)*(f*x + e))*cos(f*x
 + e) + 3*((f*x + e)^2*d^3 + d^3*e^2 - 2*(d^3*e - c*d^2*f)*(f*x + e))*sin(f
*x + e))*log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1) + (-12*I
*d^3*cos(f*x + e) + 12*d^3*sin(f*x + e) + 12*d^3)*polylog(3, I*e^(I*f*x + I
*e)) + (-2*I*(f*x + e)^3*d^3 - 6*I*(f*x + e)*d^3*e^2 + (6*I*d^3*e - 6*I*c*d
^2*f)*(f*x + e)^2)*sin(f*x + e))/(-I*a*f^3*cos(f*x + e) + a*f^3*sin(f*x + e
) + a*f^3))/f
```

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

$$\int \frac{(c+d\,x)^3}{a+a\,\sin\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^3/(a + a*sin(e + f*x)),x)
```

```
[Out] int((c + d*x)^3/(a + a*sin(e + f*x)), x)
```

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

$$\frac{\int \frac{c^3}{\sin\left(e+fx\right)+1}\,dx + \int \frac{d^3x^3}{\sin\left(e+fx\right)+1}\,dx + \int \frac{3cd^2x^2}{\sin\left(e+fx\right)+1}\,dx + \int \frac{3c^2dx}{\sin\left(e+fx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3/(a+a*sin(f*x+e)),x)
```

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

3.108 $\int \frac{(c+dx)^2}{a+a\sin(e+fx)}\,dx$

Optimal. Leaf size=113

$$\frac{4d(c+dx)\log\left(1-ie^{i(e+fx)}\right)}{af^2}-\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af}-\frac{i(c+dx)^2}{af}-\frac{4id^2\mathrm{Li}_2\left(ie^{i(e+fx)}\right)}{af^3}$$

```
[Out] -I*(d*x+c)^2/a/f-(d*x+c)^2*cot(1/2*e+1/4*Pi+1/2*f*x)/a/f+4*d*(d*x+c)*ln(1-I
*exp(I*(f*x+e)))/a/f^2-4*I*d^2*polylog(2,I*exp(I*(f*x+e)))/a/f^3
```

Rubi [A] time = 0.22, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {3318, 4184, 3717, 2190, 2279, 2391}

$$-\frac{4id^2\mathrm{PolyLog}\left(2,ie^{i(e+fx)}\right)}{af^3}+\frac{4d(c+dx)\log\left(1-ie^{i(e+fx)}\right)}{af^2}-\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af}-\frac{i(c+dx)^2}{af}$$

Antiderivative was successfully verified.

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

```
[Out] ((-I)*(c + d*x)^2)/(a*f) - ((c + d*x)^2*Cot[e/2 + Pi/4 + (f*x)/2])/(a*f) +
(4*d*(c + d*x)*Log[1 - I*E^(I*(e + f*x))])/(a*f^2) - ((4*I)*d^2*PolyLog[2,
I*E^(I*(e + f*x))])/(a*f^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3318

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(c+dx)^2}{a+a\sin(e+fx)}\,dx = \frac{\int (c+dx)^2\csc^2\left(\frac{1}{2}\left(e+\frac{\pi}{2}\right)+\frac{fx}{2}\right)dx}{2a}$$

$$= -\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{(2d)\int (c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)dx}{af}$$

$$= -\frac{i(c+dx)^2}{af}-\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{(4d)\int \frac{e^{2i\left(\frac{e}{2}+\frac{fx}{2}\right)}(c+dx)}{1-ie^{2i\left(\frac{e}{2}+\frac{fx}{2}\right)}}dx}{af}$$

$$= -\frac{i(c+dx)^2}{af}-\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{4d(c+dx)\log\left(1-ie^{i(e+fx)}\right)}{af^2}-\frac{\left(4d^2\right)\int \mathrm{lo}}{}$$

$$= -\frac{i(c+dx)^2}{af}-\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{4d(c+dx)\log\left(1-ie^{i(e+fx)}\right)}{af^2}+\frac{\left(4id^2\right)\mathrm{Sul}}{}$$

$$= -\frac{i(c+dx)^2}{af}-\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{4d(c+dx)\log\left(1-ie^{i(e+fx)}\right)}{af^2}-\frac{4id^2\mathrm{Li}_2\left(ie\right.}{af^3}$$

Mathematica [A] time = 0.74, size = 94, normalized size = 0.83

$$\frac{f(c+dx)\left(f(c+dx)\tan\left(\frac{1}{4}(2e+2fx-\pi)\right)-if(c+dx)+4d\log\left(1-ie^{i(e+fx)}\right)\right)-4id^2\text{Li}_2\left(ie^{i(e+fx)}\right)}{af^3}$$

Antiderivative was successfully verified.

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

```
[Out] ((-4*I)*d^2*PolyLog[2, I*E^(I*(e + f*x))] + f*(c + d*x)*((-I)*f*(c + d*x) +
 4*d*Log[1 - I*E^(I*(e + f*x))] + f*(c + d*x)*Tan[(2*e - Pi + 2*f*x)/4]))/(
a*f^3)
```

fricas [B] time = 0.87, size = 493, normalized size = 4.36

$$-\frac{d^2f^2x^2+2\,cdf^2x+c^2f^2+\left(d^2f^2x^2+2\,cdf^2x+c^2f^2\right)\cos\left(fx+e\right)-\left(-2i\,d^2\cos\left(fx+e\right)-2i\,d^2\sin\left(fx+e\right)-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(d^2*f^2*x^2 + 2*c*d*f^2*x + c^2*f^2 + (d^2*f^2*x^2 + 2*c*d*f^2*x + c^2*f^
2)*cos(f*x + e) - (-2*I*d^2*cos(f*x + e) - 2*I*d^2*sin(f*x + e) - 2*I*d^2)*
dilog(I*cos(f*x + e) - sin(f*x + e)) - (2*I*d^2*cos(f*x + e) + 2*I*d^2*sin(
f*x + e) + 2*I*d^2)*dilog(-I*cos(f*x + e) - sin(f*x + e)) + 2*(d^2*e - c*d*
f + (d^2*e - c*d*f)*cos(f*x + e) + (d^2*e - c*d*f)*sin(f*x + e))*log(cos(f*
x + e) + I*sin(f*x + e) + I) - 2*(d^2*f*x + d^2*e + (d^2*f*x + d^2*e)*cos(f
*x + e) + (d^2*f*x + d^2*e)*sin(f*x + e))*log(I*cos(f*x + e) + sin(f*x + e)
 + 1) - 2*(d^2*f*x + d^2*e + (d^2*f*x + d^2*e)*cos(f*x + e) + (d^2*f*x + d^
2*e)*sin(f*x + e))*log(-I*cos(f*x + e) + sin(f*x + e) + 1) + 2*(d^2*e - c*d
*f + (d^2*e - c*d*f)*cos(f*x + e) + (d^2*e - c*d*f)*sin(f*x + e))*log(-cos(
f*x + e) + I*sin(f*x + e) + I) - (d^2*f^2*x^2 + 2*c*d*f^2*x + c^2*f^2)*sin(
f*x + e))/(a*f^3*cos(f*x + e) + a*f^3*sin(f*x + e) + a*f^3)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^2/(a*sin(f*x + e) + a), x)
```

maple [B] time = 0.11, size = 254, normalized size = 2.25

$$-\frac{2\left(d^{2}x^{2}+2cdx+c^{2}\right)}{fa\left(e^{i\left(fx+e\right)}+i\right)}+\frac{4\ln\left(e^{i\left(fx+e\right)}+i\right)cd}{a\,f^{2}}-\frac{4\ln\left(e^{i\left(fx+e\right)}\right)cd}{a\,f^{2}}-\frac{2id^{2}x^{2}}{af}-\frac{4id^{2}ex}{a\,f^{2}}-\frac{2id^{2}e^{2}}{a\,f^{3}}+\frac{4d^{2}\ln\left(1-ie^{i\left(fx+e\right)}\right)x}{a\,f^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2*(d^2*x^2+2*c*d*x+c^2)/f/a/(exp(I*(f*x+e))+I)+4/a/f^2*ln(exp(I*(f*x+e))+I
)*c*d-4/a/f^2*ln(exp(I*(f*x+e)))*c*d-2*I/a/f*d^2*x^2-4*I/a/f^2*d^2*e*x-2*I/
a/f^3*d^2*e^2+4/a/f^2*d^2*ln(1-I*exp(I*(f*x+e)))*x+4/a/f^3*d^2*ln(1-I*exp(I
*(f*x+e)))*e-4*I*d^2*polylog(2,I*exp(I*(f*x+e)))/a/f^3-4/a/f^3*d^2*e*ln(exp
(I*(f*x+e))+I)+4/a/f^3*d^2*e*ln(exp(I*(f*x+e)))
```

maxima [B] time = 0.69, size = 312, normalized size = 2.76

$$\frac{2i\,c^{2}f^{2}+\left(4\,cdf\cos\left(fx+e\right)+4i\,cdf\sin\left(fx+e\right)+4i\,cdf\right)\arctan\left(\sin\left(fx+e\right)+1,\cos\left(fx+e\right)\right)-\left(4\,d^{2}fx\cos\ldots\right.}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (2*I*c^2*f^2 + (4*c*d*f*cos(f*x + e) + 4*I*c*d*f*sin(f*x + e) + 4*I*c*d*f)*
arctan2(sin(f*x + e) + 1, cos(f*x + e)) - (4*d^2*f*x*cos(f*x + e) + 4*I*d^2
*f*x*sin(f*x + e) + 4*I*d^2*f*x)*arctan2(cos(f*x + e), sin(f*x + e) + 1) -
2*(d^2*f^2*x^2 + 2*c*d*f^2*x)*cos(f*x + e) - (4*d^2*cos(f*x + e) + 4*I*d^2*
sin(f*x + e) + 4*I*d^2)*dilog(I*e^(I*f*x + I*e)) + (2*d^2*f*x + 2*c*d*f + (
-2*I*d^2*f*x - 2*I*c*d*f)*cos(f*x + e) + 2*(d^2*f*x + c*d*f)*sin(f*x + e))*
log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1) + (-2*I*d^2*f^2*x
^2 - 4*I*c*d*f^2*x)*sin(f*x + e))/(-I*a*f^3*cos(f*x + e) + a*f^3*sin(f*x +
e) + a*f^3)
```

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

$$\int \frac{(c+d\,x)^{2}}{a+a\,\sin\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((c + d*x)^2/(a + a*sin(e + f*x)), x)
```

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

$$\frac{\int \frac{c^2}{\sin(e+fx)+1}\,dx + \int \frac{d^2x^2}{\sin(e+fx)+1}\,dx + \int \frac{2cdx}{\sin(e+fx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (Integral(c**2/(sin(e + f*x) + 1), x) + Integral(d**2*x**2/(sin(e + f*x) +
1), x) + Integral(2*c*d*x/(sin(e + f*x) + 1), x))/a
```

3.109 $\int \frac{c+dx}{a+a\sin(e+fx)}\,dx$

Optimal. Leaf size=60

$$\frac{2d\log\left(\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\right)}{af^2}-\frac{(c+dx)\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af}$$

```
[Out] -(d*x+c)*cot(1/2*e+1/4*Pi+1/2*f*x)/a/f+2*d*ln(sin(1/2*e+1/4*Pi+1/2*f*x))/a/
f^2
```

Rubi [A] time = 0.06, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3318, 4184, 3475}

$$\frac{2d\log\left(\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\right)}{af^2}-\frac{(c+dx)\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)/(a + a*Sin[e + f*x]),x]
```

```
[Out] -(((c + d*x)*Cot[e/2 + Pi/4 + (f*x)/2])/(a*f)) + (2*d*Log[Sin[e/2 + Pi/4 +
(f*x)/2]])/(a*f^2)
```

Rule 3318

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

Rule 3475

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

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{c+dx}{a+a\sin(e+fx)}\,dx = \frac{\int (c+dx)\csc^2\left(\frac{1}{2}\left(e+\frac{\pi}{2}\right)+\frac{fx}{2}\right)dx}{2a}$$
$$= -\frac{(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{d\int \cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)dx}{af}$$
$$= -\frac{(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{2d\log\left(\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\right)}{af^2}$$

Mathematica [A] time = 0.16, size = 51, normalized size = 0.85

$$\frac{f(c+dx)\tan\left(\frac{1}{4}(2e+2fx-\pi)\right)+2d\log\left(\cos\left(\frac{1}{4}(2e+2fx-\pi)\right)\right)}{af^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)/(a + a*Sin[e + f*x]),x]
```

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

fricas [B] time = 0.75, size = 100, normalized size = 1.67

$$-\frac{dfx+cf+\left(dfx+cf\right)\cos\left(fx+e\right)-\left(d\cos\left(fx+e\right)+d\sin\left(fx+e\right)+d\right)\log\left(\sin\left(fx+e\right)+1\right)-\left(dfx+cf\right)}{af^2\cos\left(fx+e\right)+af^2\sin\left(fx+e\right)+af^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+a*sin(f*x+e)),x, algorithm="fricas")
```

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

giac [B] time = 0.62, size = 696, normalized size = 11.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+a*sin(f*x+e)),x, algorithm="giac")
```

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

maple [B] time = 0.08, size = 122, normalized size = 2.03

$$-\frac{2c}{af\left(\tan\left(\frac{fx}{2}+\frac{e}{2}\right)+1\right)}+\frac{dx\tan\left(\frac{fx}{2}+\frac{e}{2}\right)}{a\left(\tan\left(\frac{fx}{2}+\frac{e}{2}\right)+1\right)f}-\frac{dx}{a\left(\tan\left(\frac{fx}{2}+\frac{e}{2}\right)+1\right)f}+\frac{2d\ln\left(\tan\left(\frac{fx}{2}+\frac{e}{2}\right)+1\right)}{af^2}-\frac{d\ln\left(1+\tan\right.}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(a+a*sin(f*x+e)),x)
```

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

maxima [B] time = 0.33, size = 169, normalized size = 2.82

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+a*sin(f*x+e)),x, algorithm="maxima")
```

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

mupad [B] time = 1.04, size = 66, normalized size = 1.10

$$\frac{2\,d\,\ln\left(\mathrm{e}^{e\,1\mathrm{i}}\,\mathrm{e}^{f\,x\,1\mathrm{i}}+1\mathrm{i}\right)}{a\,f^2}-\frac{2\,\left(c+d\,x\right)}{a\,f\,\left(\mathrm{e}^{e\,1\mathrm{i}+f\,x\,1\mathrm{i}}+1\mathrm{i}\right)}-\frac{d\,x\,2\mathrm{i}}{a\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/(a + a*sin(e + f*x)),x)
```

```
[Out] (2*d*log(exp(e*1i)*exp(f*x*1i) + 1i))/(a*f^2) - (2*(c + d*x))/(a*f*(exp(e*1
i + f*x*1i) + 1i)) - (d*x*2i)/(a*f)
```

sympy [A] time = 1.12, size = 272, normalized size = 4.53

$$\begin{cases} -\frac{2cf}{af^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+af^2}+\frac{dfx\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{af^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+af^2}-\frac{dfx}{af^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+af^2}+\frac{2d\log\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+1\right)\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{af^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+af^2}+\frac{2d\log\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+1\right)}{af^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)+af^2}-\frac{d}{} \\ \frac{cx+\frac{dx^2}{2}}{a\sin\left(e\right)+a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+a*sin(f*x+e)),x)
```

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

3.110 $\int \frac{1}{(c+dx)(a+a\sin(e+fx))} dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c+dx)(a\sin(e+fx)+a)},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)/(a+a*sin(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)(a+a\sin(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)*(a + a*Sin[e + f*x])),x]
```

```
[Out] Defer[Int][1/((c + d*x)*(a + a*Sin[e + f*x])), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)(a+a\sin(e+fx))}\,dx = \int \frac{1}{(c+dx)(a+a\sin(e+fx))}\,dx$$

Mathematica [A] time = 5.36, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)(a+a\sin(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)*(a + a*Sin[e + f*x])),x]
```

```
[Out] Integrate[1/((c + d*x)*(a + a*Sin[e + f*x])), x]
```

fricas [A] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{adx+ac+(adx+ac)\sin\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+a*sin(f*x+e)),x, algorithm="fricas")
[Out] integral(1/(a*d*x + a*c + (a*d*x + a*c)*sin(f*x + e)), x)
```

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

$$\int \frac{1}{(dx+c)\left(a\sin\left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+a*sin(f*x+e)),x, algorithm="giac")
[Out] integrate(1/((d*x + c)*(a*sin(f*x + e) + a)), x)
```

maple [A] time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(a+a\sin\left(fx+e\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)/(a+a*sin(f*x+e)),x)
[Out] int(1/(d*x+c)/(a+a*sin(f*x+e)),x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+a*sin(f*x+e)),x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+a\,\sin\left(e+f\,x\right)\right)\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a*sin(e + f*x))*(c + d*x)),x)
[Out] int(1/((a + a*sin(e + f*x))*(c + d*x)), x)
```

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

$$\frac{\int \frac{1}{c\sin\left(e+fx\right)+c+dx\sin\left(e+fx\right)+dx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+a*sin(f*x+e)),x)
```

```
[Out] Integral(1/(c*sin(e + f*x) + c + d*x*sin(e + f*x) + d*x), x)/a
```

3.111 $\int \frac{1}{(c+dx)^2(a+a\sin(e+fx))}\,dx$

Optimal. Leaf size=23

$$\mathrm{Int}\left(\frac{1}{(c+dx)^2(a\sin(e+fx)+a)},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)^2/(a+a*sin(f*x+e)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)^2(a+a\sin(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)^2*(a + a*Sin[e + f*x])),x]
[Out] Defer[Int][1/((c + d*x)^2*(a + a*Sin[e + f*x])), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)^2(a+a\sin(e+fx))}\,dx = \int \frac{1}{(c+dx)^2(a+a\sin(e+fx))}\,dx$$

Mathematica [A] time = 5.06, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)^2(a+a\sin(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)^2*(a + a*Sin[e + f*x])),x]
[Out] Integrate[1/((c + d*x)^2*(a + a*Sin[e + f*x])), x]
```

fricas [A] time = 0.68, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{1}{ad^2x^2+2\,acdx+ac^2+\left(ad^2x^2+2\,acdx+ac^2\right)\sin\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+a*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*d^2*x^2 + 2*a*c*d*x + a*c^2 + (a*d^2*x^2 + 2*a*c*d*x + a*c^2)
*sin(f*x + e)), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+a*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)^2*(a*sin(f*x + e) + a)), x)
```

maple [A] time = 0.42, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^2/(a+a*sin(f*x+e)),x)
```

```
[Out] int(1/(d*x+c)^2/(a+a*sin(f*x+e)),x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+a*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+a\,\sin\left(e+f\,x\right)\right)\,{\left(c+d\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a*sin(e + f*x))*(c + d*x)^2),x)
```

```
[Out] int(1/((a + a*sin(e + f*x))*(c + d*x)^2), x)
```

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

$$\frac{\int \frac{1}{c^2\sin(e+fx)+c^2+2cdx\sin(e+fx)+2cdx+d^2x^2\sin(e+fx)+d^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)**2/(a+a*sin(f*x+e)),x)
```

```
[Out] Integral(1/(c**2*sin(e + f*x) + c**2 + 2*c*d*x*sin(e + f*x) + 2*c*d*x + d**
2*x**2*sin(e + f*x) + d**2*x**2), x)/a
```

3.112 $\int \frac{(c+dx)^3}{(a+a\sin(e+fx))^2}\,dx$

Optimal. Leaf size=309

$$-\frac{4id^2(c+dx)\text{Li}_2\left(ie^{i(e+fx)}\right)}{a^2f^3}-\frac{2d^2(c+dx)\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{a^2f^3}+\frac{2d(c+dx)^2\log\left(1-ie^{i(e+fx)}\right)}{a^2f^2}-\frac{d(c+dx)^2\csc^2\left(\frac{e}{2}+\right.}{2a^2f^2}$$

```
[Out] -1/3*I*(d*x+c)^3/a^2/f-2*d^2*(d*x+c)*cot(1/2*e+1/4*Pi+1/2*f*x)/a^2/f^3-1/3*
(d*x+c)^3*cot(1/2*e+1/4*Pi+1/2*f*x)/a^2/f-1/2*d*(d*x+c)^2*csc(1/2*e+1/4*Pi+
1/2*f*x)^2/a^2/f^2-1/6*(d*x+c)^3*cot(1/2*e+1/4*Pi+1/2*f*x)*csc(1/2*e+1/4*Pi
+1/2*f*x)^2/a^2/f+2*d*(d*x+c)^2*ln(1-I*exp(I*(f*x+e)))/a^2/f^2+4*d^3*ln(sin
(1/2*e+1/4*Pi+1/2*f*x))/a^2/f^4-4*I*d^2*(d*x+c)*polylog(2,I*exp(I*(f*x+e)))
/a^2/f^3+4*d^3*polylog(3,I*exp(I*(f*x+e)))/a^2/f^4
```

Rubi [A] time = 0.38, antiderivative size = 309, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {3318, 4186, 4184, 3475, 3717, 2190, 2531, 2282, 6589}

$$-\frac{4id^2(c+dx)\text{PolyLog}\left(2,ie^{i(e+fx)}\right)}{a^2f^3}+\frac{4d^3\text{PolyLog}\left(3,ie^{i(e+fx)}\right)}{a^2f^4}-\frac{2d^2(c+dx)\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{a^2f^3}+\frac{2d(c+dx)^2\log\left(\right.}{a^2f^2}$$

Antiderivative was successfully verified.

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

```
[Out] ((-I/3)*(c + d*x)^3)/(a^2*f) - (2*d^2*(c + d*x)*Cot[e/2 + Pi/4 + (f*x)/2])/
(a^2*f^3) - ((c + d*x)^3*Cot[e/2 + Pi/4 + (f*x)/2])/(3*a^2*f) - (d*(c + d*x
)^2*Csc[e/2 + Pi/4 + (f*x)/2]^2)/(2*a^2*f^2) - ((c + d*x)^3*Cot[e/2 + Pi/4
+ (f*x)/2]*Csc[e/2 + Pi/4 + (f*x)/2]^2)/(6*a^2*f) + (2*d*(c + d*x)^2*Log[1
- I*E^(I*(e + f*x))])/(a^2*f^2) + (4*d^3*Log[Sin[e/2 + Pi/4 + (f*x)/2]])/(a
^2*f^4) - ((4*I)*d^2*(c + d*x)*PolyLog[2, I*E^(I*(e + f*x))])/(a^2*f^3) + (
4*d^3*PolyLog[3, I*E^(I*(e + f*x))])/(a^2*f^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

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

Rule 3475

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
```

```
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(c+dx)^3}{(a+a\sin(e+fx))^2}\,dx = \frac{\int (c+dx)^3 \csc^4\left(\frac{1}{2}\left(e+\frac{\pi}{2}\right)+\frac{fx}{2}\right)dx}{4a^2}$$

$$= -\frac{d(c+dx)^2\csc^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2a^2f^2} - \frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\csc^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{6a^2f} + \cdots$$

$$= -\frac{2d^2(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{a^2f^3} - \frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+dx)^2\csc^2\left(\frac{e}{2}+\cdots\right)}{2a^2f^2}$$

$$= -\frac{i(c+dx)^3}{3a^2f} - \frac{2d^2(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{a^2f^3} - \frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+\cdots}{}$$

$$= -\frac{i(c+dx)^3}{3a^2f} - \frac{2d^2(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{a^2f^3} - \frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+\cdots}{}$$

$$= -\frac{i(c+dx)^3}{3a^2f} - \frac{2d^2(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{a^2f^3} - \frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+\cdots}{}$$

$$= -\frac{i(c+dx)^3}{3a^2f} - \frac{2d^2(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{a^2f^3} - \frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+\cdots}{}$$

$$= -\frac{i(c+dx)^3}{3a^2f} - \frac{2d^2(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{a^2f^3} - \frac{(c+dx)^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+\cdots}{}$$

Mathematica [A] time = 2.13, size = 257, normalized size = 0.83

$$\frac{\frac{24d^2\left(d\text{Li}_3\left(ie^{i(e+fx)}\right)-if(c+dx)\text{Li}_2\left(ie^{i(e+fx)}\right)\right)}{f^2}+\frac{12d^2(c+dx)\tan\left(\frac{1}{4}(2e+2fx-\pi)\right)}{f}+12d(c+dx)^2\log\left(1-ie^{i(e+fx)}\right)+2f(c+dx)^3\tan\left(\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] ((-2*I)*f*(c + d*x)^3 + 12*d*(c + d*x)^2*Log[1 - I*E^(I*(e + f*x))] + (24*d
^3*Log[Cos[(2*e - Pi + 2*f*x)/4]])/f^2 + (24*d^2*((-I)*f*(c + d*x)*PolyLog[
2, I*E^(I*(e + f*x))] + d*PolyLog[3, I*E^(I*(e + f*x))]))/f^2 - 3*d*(c + d*
x)^2*Sec[(2*e - Pi + 2*f*x)/4]^2 + (12*d^2*(c + d*x)*Tan[(2*e - Pi + 2*f*x)
/4])/f + 2*f*(c + d*x)^3*Tan[(2*e - Pi + 2*f*x)/4] + f*(c + d*x)^3*Sec[(2*e
 - Pi + 2*f*x)/4]^2*Tan[(2*e - Pi + 2*f*x)/4])/(6*a^2*f^2)
```

fricas [C] time = 1.07, size = 1708, normalized size = 5.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*(d^3*f^3*x^3 + c^3*f^3 + 3*c^2*d*f^2 + 3*(c*d^2*f^3 + d^3*f^2)*x^2 + (d
^3*f^3*x^3 + 3*c*d^2*f^3*x^2 + c^3*f^3 + 6*c*d^2*f + 3*(c^2*d*f^3 + 2*d^3*f
)*x)*cos(f*x + e)^2 + 3*(c^2*d*f^3 + 2*c*d^2*f^2)*x + (2*d^3*f^3*x^3 + 2*c^
3*f^3 + 3*c^2*d*f^2 + 6*c*d^2*f + 3*(2*c*d^2*f^3 + d^3*f^2)*x^2 + 6*(c^2*d*
f^3 + c*d^2*f^2 + d^3*f)*x)*cos(f*x + e) - (-12*I*d^3*f*x - 12*I*c*d^2*f +
(6*I*d^3*f*x + 6*I*c*d^2*f)*cos(f*x + e)^2 + (-6*I*d^3*f*x - 6*I*c*d^2*f)*c
os(f*x + e) + (-12*I*d^3*f*x - 12*I*c*d^2*f + (-6*I*d^3*f*x - 6*I*c*d^2*f)*
cos(f*x + e))*sin(f*x + e))*dilog(I*cos(f*x + e) - sin(f*x + e)) - (12*I*d^
3*f*x + 12*I*c*d^2*f + (-6*I*d^3*f*x - 6*I*c*d^2*f)*cos(f*x + e)^2 + (6*I*d
^3*f*x + 6*I*c*d^2*f)*cos(f*x + e) + (12*I*d^3*f*x + 12*I*c*d^2*f + (6*I*d^
3*f*x + 6*I*c*d^2*f)*cos(f*x + e))*sin(f*x + e))*dilog(-I*cos(f*x + e) - si
n(f*x + e)) - 3*(2*d^3*e^2 - 4*c*d^2*e*f + 2*c^2*d*f^2 + 4*d^3 - (d^3*e^2 -
 2*c*d^2*e*f + c^2*d*f^2 + 2*d^3)*cos(f*x + e)^2 + (d^3*e^2 - 2*c*d^2*e*f +
 c^2*d*f^2 + 2*d^3)*cos(f*x + e) + (2*d^3*e^2 - 4*c*d^2*e*f + 2*c^2*d*f^2 +
 4*d^3 + (d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 + 2*d^3)*cos(f*x + e))*sin(f*x
+ e))*log(cos(f*x + e) + I*sin(f*x + e) + I) - 3*(2*d^3*f^2*x^2 + 4*c*d^2*f
^2*x - 2*d^3*e^2 + 4*c*d^2*e*f - (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2
*c*d^2*e*f)*cos(f*x + e)^2 + (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d
^2*e*f)*cos(f*x + e) + (2*d^3*f^2*x^2 + 4*c*d^2*f^2*x - 2*d^3*e^2 + 4*c*d^2
*e*f + (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*cos(f*x + e))*
sin(f*x + e))*log(I*cos(f*x + e) + sin(f*x + e) + 1) - 3*(2*d^3*f^2*x^2 + 4
```

```
*c*d^2*f^2*x - 2*d^3*e^2 + 4*c*d^2*e*f - (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3
*e^2 + 2*c*d^2*e*f)*cos(f*x + e)^2 + (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2
 + 2*c*d^2*e*f)*cos(f*x + e) + (2*d^3*f^2*x^2 + 4*c*d^2*f^2*x - 2*d^3*e^2 +
 4*c*d^2*e*f + (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*cos(f*
x + e))*sin(f*x + e))*log(-I*cos(f*x + e) + sin(f*x + e) + 1) - 3*(2*d^3*e^
2 - 4*c*d^2*e*f + 2*c^2*d*f^2 + 4*d^3 - (d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2
+ 2*d^3)*cos(f*x + e)^2 + (d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 + 2*d^3)*cos(f
*x + e) + (2*d^3*e^2 - 4*c*d^2*e*f + 2*c^2*d*f^2 + 4*d^3 + (d^3*e^2 - 2*c*d
^2*e*f + c^2*d*f^2 + 2*d^3)*cos(f*x + e))*sin(f*x + e))*log(-cos(f*x + e) +
 I*sin(f*x + e) + I) + 6*(d^3*cos(f*x + e)^2 - d^3*cos(f*x + e) - 2*d^3 - (
d^3*cos(f*x + e) + 2*d^3)*sin(f*x + e))*polylog(3, I*cos(f*x + e) - sin(f*x
 + e)) + 6*(d^3*cos(f*x + e)^2 - d^3*cos(f*x + e) - 2*d^3 - (d^3*cos(f*x +
e) + 2*d^3)*sin(f*x + e))*polylog(3, -I*cos(f*x + e) - sin(f*x + e)) - (d^3
*f^3*x^3 + c^3*f^3 - 3*c^2*d*f^2 + 3*(c*d^2*f^3 - d^3*f^2)*x^2 + 3*(c^2*d*f
^3 - 2*c*d^2*f^2)*x - (d^3*f^3*x^3 + 3*c*d^2*f^3*x^2 + c^3*f^3 + 6*c*d^2*f
+ 3*(c^2*d*f^3 + 2*d^3*f)*x)*cos(f*x + e))*sin(f*x + e))/(a^2*f^4*cos(f*x +
 e)^2 - a^2*f^4*cos(f*x + e) - 2*a^2*f^4 - (a^2*f^4*cos(f*x + e) + 2*a^2*f^
4)*sin(f*x + e))
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^3/(a*sin(f*x + e) + a)^2, x)
```

maple [B] time = 1.23, size = 807, normalized size = 2.61

$$-\frac{4i\,\mathrm{polylog}\left(2, i e^{i\left(fx+e\right)}\right) d^3 x}{a^2 f^3}+\frac{2\ln\left(e^{i\left(fx+e\right)}+i\right) c^2 d}{a^2 f^2}-\frac{2\ln\left(e^{i\left(fx+e\right)}\right) c^2 d}{a^2 f^2}-\frac{2\ln\left(1-i e^{i\left(fx+e\right)}\right) d^3 e^2}{a^2 f^4}+\frac{2\ln\left(e^{i\left(fx+e\right)}\right.}{a^2 f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2*I/a^2/f^3*c*d^2*e^2+2/a^2/f^2*ln(exp(I*(f*x+e))+I)*c^2*d-2/a^2/f^2*ln(ex
p(I*(f*x+e)))*c^2*d-2/a^2/f^4*ln(1-I*exp(I*(f*x+e)))*d^3*e^2+2/a^2/f^4*ln(e
xp(I*(f*x+e))+I)*d^3*e^2-2/a^2/f^4*ln(exp(I*(f*x+e)))*d^3*e^2-4*I/a^2/f^3*c
*d^2*polylog(2,I*exp(I*(f*x+e)))+4/3*I/a^2/f^4*d^3*e^3+2*I/a^2/f^3*d^3*e^2*
x-4/a^2/f^3*ln(exp(I*(f*x+e))+I)*c*d^2*e+4/a^2/f^3*ln(exp(I*(f*x+e)))*c*d^2
```

```
*e+4/a^2/f^2*ln(1-I*exp(I*(f*x+e)))*c*d^2*x+4/a^2/f^3*ln(1-I*exp(I*(f*x+e))
)*c*d^2*e-2/3*I*(I*d^3*f^2*x^3+3*d^3*f^2*x^3*exp(I*(f*x+e))+3*I*c*d^2*f^2*x
^2+6*I*d^3*x+9*c*d^2*f^2*x^2*exp(I*(f*x+e))+3*f*d^3*x^2*exp(2*I*(f*x+e))+6*
I*c*d^2-6*I*c*d^2*exp(2*I*(f*x+e))+I*c^3*f^2+9*c^2*d*f^2*x*exp(I*(f*x+e))+6
*f*c*d^2*x*exp(2*I*(f*x+e))+3*I*f*d^3*x^2*exp(I*(f*x+e))+3*I*f*c^2*d*exp(I*
(f*x+e))+3*I*c^2*d*f^2*x+3*c^3*f^2*exp(I*(f*x+e))+3*f*c^2*d*exp(2*I*(f*x+e)
)-6*I*d^3*x*exp(2*I*(f*x+e))+12*d^3*x*exp(I*(f*x+e))+6*I*f*c*d^2*x*exp(I*(f
*x+e))+12*c*d^2*exp(I*(f*x+e)))/(exp(I*(f*x+e))+I)^3/f^3/a^2-2/3*I/a^2/f*d^
3*x^3-2*I/a^2/f*c*d^2*x^2-4*I/a^2/f^2*c*d^2*e*x-4*I/a^2/f^3*polylog(2,I*exp
(I*(f*x+e)))*d^3*x+2/a^2/f^2*ln(1-I*exp(I*(f*x+e)))*d^3*x^2+4/a^2/f^4*ln(ex
p(I*(f*x+e))+I)*d^3-4/a^2/f^4*ln(exp(I*(f*x+e)))*d^3+4*d^3*polylog(3,I*exp(
I*(f*x+e)))/a^2/f^4
```

maxima [B] time = 6.10, size = 3580, normalized size = 11.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*(6*c*d^2*e^2*(3*sin(f*x + e)/(cos(f*x + e) + 1) + 3*sin(f*x + e)^2/(co
s(f*x + e) + 1)^2 + 2)/(a^2*f^2 + 3*a^2*f^2*sin(f*x + e)/(cos(f*x + e) + 1)
 + 3*a^2*f^2*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + a^2*f^2*sin(f*x + e)^3/(
cos(f*x + e) + 1)^3) + 6*(2*(f*x + 3*(f*x + e)*sin(f*x + e) + e + cos(f*x +
 e) + sin(2*f*x + 2*e))*cos(3*f*x + 3*e) - 2*(9*(f*x + e)*cos(f*x + e) - 6*
sin(f*x + e) - 1)*cos(2*f*x + 2*e) - 6*cos(2*f*x + 2*e)^2 - 6*cos(f*x + e)^
2 - (6*(cos(f*x + e) + sin(2*f*x + 2*e))*cos(3*f*x + 3*e) - cos(3*f*x + 3*e
)^2 + 6*(3*sin(f*x + e) + 1)*cos(2*f*x + 2*e) - 9*cos(2*f*x + 2*e)^2 - 9*co
s(f*x + e)^2 - 2*(3*cos(2*f*x + 2*e) - 3*sin(f*x + e) - 1)*sin(3*f*x + 3*e)
 - sin(3*f*x + 3*e)^2 - 18*cos(f*x + e)*sin(2*f*x + 2*e) - 9*sin(2*f*x + 2*
e)^2 - 9*sin(f*x + e)^2 - 6*sin(f*x + e) - 1)*log(cos(f*x + e)^2 + sin(f*x
+ e)^2 + 2*sin(f*x + e) + 1) - 2*(3*(f*x + e)*cos(f*x + e) + cos(2*f*x + 2*
e) - sin(f*x + e))*sin(3*f*x + 3*e) - 6*(f*x + 3*(f*x + e)*sin(f*x + e) + e
 + 2*cos(f*x + e))*sin(2*f*x + 2*e) - 6*sin(2*f*x + 2*e)^2 - 6*sin(f*x + e)
^2 - 2*sin(f*x + e))*c*d^2*e/(a^2*f^2*cos(3*f*x + 3*e)^2 + 9*a^2*f^2*cos(2*
f*x + 2*e)^2 + 9*a^2*f^2*cos(f*x + e)^2 + a^2*f^2*sin(3*f*x + 3*e)^2 + 18*a
^2*f^2*cos(f*x + e)*sin(2*f*x + 2*e) + 9*a^2*f^2*sin(2*f*x + 2*e)^2 + 9*a^2
*f^2*sin(f*x + e)^2 + 6*a^2*f^2*sin(f*x + e) + a^2*f^2 - 6*(a^2*f^2*cos(f*x
 + e) + a^2*f^2*sin(2*f*x + 2*e))*cos(3*f*x + 3*e) - 6*(3*a^2*f^2*sin(f*x +
 e) + a^2*f^2)*cos(2*f*x + 2*e) + 2*(3*a^2*f^2*cos(2*f*x + 2*e) - 3*a^2*f^2
*sin(f*x + e) - a^2*f^2)*sin(3*f*x + 3*e)) - 6*c^2*d*e*(3*sin(f*x + e)/(cos
(f*x + e) + 1) + 3*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 2)/(a^2*f + 3*a^2*
f*sin(f*x + e)/(cos(f*x + e) + 1) + 3*a^2*f*sin(f*x + e)^2/(cos(f*x + e) +
1)^2 + a^2*f*sin(f*x + e)^3/(cos(f*x + e) + 1)^3) - 3*(2*(f*x + 3*(f*x + e)
*sin(f*x + e) + e + cos(f*x + e) + sin(2*f*x + 2*e))*cos(3*f*x + 3*e) - 2*(
```

```
9*(f*x + e)*cos(f*x + e) - 6*sin(f*x + e) - 1)*cos(2*f*x + 2*e) - 6*cos(2*f
*x + 2*e)^2 - 6*cos(f*x + e)^2 - (6*(cos(f*x + e) + sin(2*f*x + 2*e))*cos(3
*f*x + 3*e) - cos(3*f*x + 3*e)^2 + 6*(3*sin(f*x + e) + 1)*cos(2*f*x + 2*e)
- 9*cos(2*f*x + 2*e)^2 - 9*cos(f*x + e)^2 - 2*(3*cos(2*f*x + 2*e) - 3*sin(f
*x + e) - 1)*sin(3*f*x + 3*e) - sin(3*f*x + 3*e)^2 - 18*cos(f*x + e)*sin(2*
f*x + 2*e) - 9*sin(2*f*x + 2*e)^2 - 9*sin(f*x + e)^2 - 6*sin(f*x + e) - 1)*
log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1) - 2*(3*(f*x + e)*
cos(f*x + e) + cos(2*f*x + 2*e) - sin(f*x + e))*sin(3*f*x + 3*e) - 6*(f*x +
 3*(f*x + e)*sin(f*x + e) + e + 2*cos(f*x + e))*sin(2*f*x + 2*e) - 6*sin(2*
f*x + 2*e)^2 - 6*sin(f*x + e)^2 - 2*sin(f*x + e))*c^2*d/(a^2*f*cos(3*f*x +
3*e)^2 + 9*a^2*f*cos(2*f*x + 2*e)^2 + 9*a^2*f*cos(f*x + e)^2 + a^2*f*sin(3*
f*x + 3*e)^2 + 18*a^2*f*cos(f*x + e)*sin(2*f*x + 2*e) + 9*a^2*f*sin(2*f*x +
 2*e)^2 + 9*a^2*f*sin(f*x + e)^2 + 6*a^2*f*sin(f*x + e) + a^2*f - 6*(a^2*f*
cos(f*x + e) + a^2*f*sin(2*f*x + 2*e))*cos(3*f*x + 3*e) - 6*(3*a^2*f*sin(f*
x + e) + a^2*f)*cos(2*f*x + 2*e) + 2*(3*a^2*f*cos(2*f*x + 2*e) - 3*a^2*f*si
n(f*x + e) - a^2*f)*sin(3*f*x + 3*e)) + 2*c^3*(3*sin(f*x + e)/(cos(f*x + e)
 + 1) + 3*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 2)/(a^2 + 3*a^2*sin(f*x + e
)/(cos(f*x + e) + 1) + 3*a^2*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + a^2*sin(
f*x + e)^3/(cos(f*x + e) + 1)^3) - 3*(2*I*d^3*e^3 + 12*I*d^3*e - 12*I*c*d^2
*f + (-6*I*d^3*e^2 - 12*I*d^3 + 6*(d^3*e^2 + 2*d^3)*cos(3*f*x + 3*e) + (18*
I*d^3*e^2 + 36*I*d^3)*cos(2*f*x + 2*e) - 18*(d^3*e^2 + 2*d^3)*cos(f*x + e)
+ (6*I*d^3*e^2 + 12*I*d^3)*sin(3*f*x + 3*e) - 18*(d^3*e^2 + 2*d^3)*sin(2*f*
x + 2*e) + (-18*I*d^3*e^2 - 36*I*d^3)*sin(f*x + e))*arctan2(sin(f*x + e) +
1, cos(f*x + e)) + (6*I*(f*x + e)^2*d^3 + (-12*I*d^3*e + 12*I*c*d^2*f)*(f*x
 + e) - 6*((f*x + e)^2*d^3 - 2*(d^3*e - c*d^2*f)*(f*x + e))*cos(3*f*x + 3*e
) + (-18*I*(f*x + e)^2*d^3 + (36*I*d^3*e - 36*I*c*d^2*f)*(f*x + e))*cos(2*f
*x + 2*e) + 18*((f*x + e)^2*d^3 - 2*(d^3*e - c*d^2*f)*(f*x + e))*cos(f*x +
e) + (-6*I*(f*x + e)^2*d^3 + (12*I*d^3*e - 12*I*c*d^2*f)*(f*x + e))*sin(3*f
*x + 3*e) + 18*((f*x + e)^2*d^3 - 2*(d^3*e - c*d^2*f)*(f*x + e))*sin(2*f*x
+ 2*e) + (18*I*(f*x + e)^2*d^3 + (-36*I*d^3*e + 36*I*c*d^2*f)*(f*x + e))*si
n(f*x + e))*arctan2(cos(f*x + e), sin(f*x + e) + 1) - 2*((f*x + e)^3*d^3 -
3*(d^3*e - c*d^2*f)*(f*x + e)^2 + 3*(d^3*e^2 + 2*d^3)*(f*x + e))*cos(3*f*x
+ 3*e) + (-6*I*(f*x + e)^3*d^3 - 6*d^3*e^2 - 12*I*d^3*e + 12*I*c*d^2*f + (1
8*I*d^3*e - 18*I*c*d^2*f - 6*d^3)*(f*x + e)^2 + (-18*I*d^3*e^2 + 12*d^3*e -
 12*c*d^2*f - 24*I*d^3)*(f*x + e))*cos(2*f*x + 2*e) + (6*d^3*e^3 - 6*I*(f*x
 + e)^2*d^3 - 6*I*d^3*e^2 + 24*d^3*e - 24*c*d^2*f + (12*I*d^3*e - 12*I*c*d^
2*f + 12*d^3)*(f*x + e))*cos(f*x + e) + (12*I*(f*x + e)*d^3 - 12*I*d^3*e +
12*I*c*d^2*f - 12*((f*x + e)*d^3 - d^3*e + c*d^2*f)*cos(3*f*x + 3*e) + (-36
*I*(f*x + e)*d^3 + 36*I*d^3*e - 36*I*c*d^2*f)*cos(2*f*x + 2*e) + 36*((f*x +
 e)*d^3 - d^3*e + c*d^2*f)*cos(f*x + e) + (-12*I*(f*x + e)*d^3 + 12*I*d^3*e
 - 12*I*c*d^2*f)*sin(3*f*x + 3*e) + 36*((f*x + e)*d^3 - d^3*e + c*d^2*f)*si
n(2*f*x + 2*e) + (36*I*(f*x + e)*d^3 - 36*I*d^3*e + 36*I*c*d^2*f)*sin(f*x +
 e))*dilog(I*e^(I*f*x + I*e)) - (3*(f*x + e)^2*d^3 + 3*d^3*e^2 + 6*d^3 - 6*
(d^3*e - c*d^2*f)*(f*x + e) - (-3*I*(f*x + e)^2*d^3 - 3*I*d^3*e^2 - 6*I*d^3
 + (6*I*d^3*e - 6*I*c*d^2*f)*(f*x + e))*cos(3*f*x + 3*e) - 9*((f*x + e)^2*d
```

```
^3 + d^3*e^2 + 2*d^3 - 2*(d^3*e - c*d^2*f)*(f*x + e))*cos(2*f*x + 2*e) - (9
*I*(f*x + e)^2*d^3 + 9*I*d^3*e^2 + 18*I*d^3 + (-18*I*d^3*e + 18*I*c*d^2*f)*
(f*x + e))*cos(f*x + e) - 3*((f*x + e)^2*d^3 + d^3*e^2 + 2*d^3 - 2*(d^3*e -
 c*d^2*f)*(f*x + e))*sin(3*f*x + 3*e) - (9*I*(f*x + e)^2*d^3 + 9*I*d^3*e^2
+ 18*I*d^3 + (-18*I*d^3*e + 18*I*c*d^2*f)*(f*x + e))*sin(2*f*x + 2*e) + 9*(
(f*x + e)^2*d^3 + d^3*e^2 + 2*d^3 - 2*(d^3*e - c*d^2*f)*(f*x + e))*sin(f*x
+ e))*log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1) + (-12*I*d^
3*cos(3*f*x + 3*e) + 36*d^3*cos(2*f*x + 2*e) + 36*I*d^3*cos(f*x + e) + 12*d
^3*sin(3*f*x + 3*e) + 36*I*d^3*sin(2*f*x + 2*e) - 36*d^3*sin(f*x + e) - 12*
d^3)*polylog(3, I*e^(I*f*x + I*e)) + (-2*I*(f*x + e)^3*d^3 + (6*I*d^3*e - 6
*I*c*d^2*f)*(f*x + e)^2 + (-6*I*d^3*e^2 - 12*I*d^3)*(f*x + e))*sin(3*f*x +
3*e) + (6*(f*x + e)^3*d^3 - 6*I*d^3*e^2 + 12*d^3*e - 12*c*d^2*f - 6*(3*d^3*
e - 3*c*d^2*f + I*d^3)*(f*x + e)^2 + (18*d^3*e^2 + 12*I*d^3*e - 12*I*c*d^2*
f + 24*d^3)*(f*x + e))*sin(2*f*x + 2*e) + (6*I*d^3*e^3 + 6*(f*x + e)^2*d^3
+ 6*d^3*e^2 + 24*I*d^3*e - 24*I*c*d^2*f - 12*(d^3*e - c*d^2*f - I*d^3)*(f*x
 + e))*sin(f*x + e))/(-3*I*a^2*f^3*cos(3*f*x + 3*e) + 9*a^2*f^3*cos(2*f*x +
 2*e) + 9*I*a^2*f^3*cos(f*x + e) + 3*a^2*f^3*sin(3*f*x + 3*e) + 9*I*a^2*f^3
*sin(2*f*x + 2*e) - 9*a^2*f^3*sin(f*x + e) - 3*a^2*f^3))/f
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] \text{Hanged}
```

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

$$\frac{\int \frac{c^3}{\sin^2(e+fx)+2\sin(e+fx)+1}\,dx + \int \frac{d^3x^3}{\sin^2(e+fx)+2\sin(e+fx)+1}\,dx + \int \frac{3cd^2x^2}{\sin^2(e+fx)+2\sin(e+fx)+1}\,dx + \int \frac{3c^2dx}{\sin^2(e+fx)+2\sin(e+fx)+1}}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (Integral(c**3/(sin(e + f*x)**2 + 2*sin(e + f*x) + 1), x) + Integral(d**3*x
**3/(sin(e + f*x)**2 + 2*sin(e + f*x) + 1), x) + Integral(3*c*d**2*x**2/(si
n(e + f*x)**2 + 2*sin(e + f*x) + 1), x) + Integral(3*c**2*d*x/(sin(e + f*x)
**2 + 2*sin(e + f*x) + 1), x))/a**2
```

3.113 $\int \frac{(c+dx)^2}{(a+a\sin(e+fx))^2}\,dx$

Optimal. Leaf size=243

$$\frac{4d(c+dx)\log\left(1-ie^{i(e+fx)}\right)}{3a^2f^2}-\frac{d(c+dx)\csc^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{3a^2f^2}-\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{3a^2f}-\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{fx}{2}+\right.}{6a^2}$$

```
[Out] -1/3*I*(d*x+c)^2/a^2/f-2/3*d^2*cot(1/2*e+1/4*Pi+1/2*f*x)/a^2/f^3-1/3*(d*x+c
)^2*cot(1/2*e+1/4*Pi+1/2*f*x)/a^2/f-1/3*d*(d*x+c)*csc(1/2*e+1/4*Pi+1/2*f*x)
^2/a^2/f^2-1/6*(d*x+c)^2*cot(1/2*e+1/4*Pi+1/2*f*x)*csc(1/2*e+1/4*Pi+1/2*f*x
)^2/a^2/f+4/3*d*(d*x+c)*ln(1-I*exp(I*(f*x+e)))/a^2/f^2-4/3*I*d^2*polylog(2,
I*exp(I*(f*x+e)))/a^2/f^3
```

Rubi [A] time = 0.29, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {3318, 4186, 3767, 8, 4184, 3717, 2190, 2279, 2391}

$$-\frac{4id^2\text{PolyLog}\left(2,ie^{i(e+fx)}\right)}{3a^2f^3}+\frac{4d(c+dx)\log\left(1-ie^{i(e+fx)}\right)}{3a^2f^2}-\frac{d(c+dx)\csc^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{3a^2f^2}-\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{fx}{2}+\right.}{3a^2f}$$

Antiderivative was successfully verified.

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

```
[Out] ((-I/3)*(c + d*x)^2)/(a^2*f) - (2*d^2*Cot[e/2 + Pi/4 + (f*x)/2])/(3*a^2*f^3
) - ((c + d*x)^2*Cot[e/2 + Pi/4 + (f*x)/2])/(3*a^2*f) - (d*(c + d*x)*Csc[e/
2 + Pi/4 + (f*x)/2]^2)/(3*a^2*f^2) - ((c + d*x)^2*Cot[e/2 + Pi/4 + (f*x)/2]
*Csc[e/2 + Pi/4 + (f*x)/2]^2)/(6*a^2*f) + (4*d*(c + d*x)*Log[1 - I*E^(I*(e
+ f*x))])/(3*a^2*f^2) - (((4*I)/3)*d^2*PolyLog[2, I*E^(I*(e + f*x))])/(a^2*
f^3)
```

Rule 8

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

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3318

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
```

```
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rubi steps

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

$$= -\frac{d(c+dx)\csc^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f^2} - \frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\csc^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{6a^2f} + \frac{\int(}{}$$

$$= -\frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+dx)\csc^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f^2} - \frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}\right.}{6}$$

$$= -\frac{i(c+dx)^2}{3a^2f} - \frac{2d^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f^3} - \frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+dx)\csc^2}{3a^2}$$

$$= -\frac{i(c+dx)^2}{3a^2f} - \frac{2d^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f^3} - \frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+dx)\csc^2}{3a^2}$$

$$= -\frac{i(c+dx)^2}{3a^2f} - \frac{2d^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f^3} - \frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+dx)\csc^2}{3a^2}$$

$$= -\frac{i(c+dx)^2}{3a^2f} - \frac{2d^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f^3} - \frac{(c+dx)^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d(c+dx)\csc^2}{3a^2}$$

Mathematica [A] time = 2.45, size = 175, normalized size = 0.72

$$\frac{2\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2+2\right)\right)\tan\left(\frac{1}{4}(2e+2fx-\pi)\right)-2if(c+dx)\left(f(c+dx)+4id\log\left(1-ie^{i(e+fx)}\right)\right)+f(}{6a^2f^3}$$

Antiderivative was successfully verified.

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

```
[Out] ((-2*I)*f*(c + d*x)*(f*(c + d*x) + (4*I)*d*Log[1 - I*E^(I*(e + f*x))]) - (8
*I)*d^2*PolyLog[2, I*E^(I*(e + f*x))] + 2*(c^2*f^2 + 2*c*d*f^2*x + d^2*(2 +
 f^2*x^2))*Tan[(2*e - Pi + 2*f*x)/4] + f*(c + d*x)*Sec[(2*e - Pi + 2*f*x)/4
]^2*(-2*d + f*(c + d*x)*Tan[(2*e - Pi + 2*f*x)/4]))/(6*a^2*f^3)
```

fricas [B] time = 0.92, size = 876, normalized size = 3.60

$$d^2f^2x^2 + c^2f^2 + 2\,cdf + \left(d^2f^2x^2 + 2\,cdf^2x + c^2f^2 + 2\,d^2\right)\cos\left(fx + e\right)^2 + 2\left(cdf^2 + d^2f\right)x + 2\left(d^2f^2x^2 + c^2f^2 +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((d*x + c)^2/(a*sin(f*x + e) + a)^2, x)
```

maple [B] time = 0.95, size = 421, normalized size = 1.73

$$-\frac{2i\left(id^2f^2x^2+3d^2f^2x^2\mathrm{e}^{i(fx+e)}+2icd\,f^2x+2if\,d^2x\,\mathrm{e}^{i(fx+e)}+6cd\,f^2x\,\mathrm{e}^{i(fx+e)}+2f\,d^2x\,\mathrm{e}^{2i(fx+e)}+ic^2f^2+2ifcd\right.}{3\left(\mathrm{e}^{i(fx+e)}+i\right)^3f^3a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -2/3*I*(I*d^2*f^2*x^2+3*d^2*f^2*x^2*exp(I*(f*x+e))+2*I*c*d*f^2*x+2*I*f*d^2*
x*exp(I*(f*x+e))+6*c*d*f^2*x*exp(I*(f*x+e))+2*f*d^2*x*exp(2*I*(f*x+e))+I*c^
2*f^2+2*I*f*c*d*exp(I*(f*x+e))-2*I*d^2*exp(2*I*(f*x+e))+3*c^2*f^2*exp(I*(f*
x+e))+2*f*c*d*exp(2*I*(f*x+e))+2*I*d^2+4*d^2*exp(I*(f*x+e)))/(exp(I*(f*x+e)
)+I)^3/f^3/a^2+4/3/a^2/f^2*ln(exp(I*(f*x+e))+I)*c*d-4/3/a^2/f^2*ln(exp(I*(f
*x+e)))*c*d-2/3*I/a^2/f*d^2*x^2-4/3*I/a^2/f^2*d^2*e*x-2/3*I/a^2/f^3*d^2*e^2
+4/3/a^2/f^2*d^2*ln(1-I*exp(I*(f*x+e)))*x+4/3/a^2/f^3*d^2*ln(1-I*exp(I*(f*x
+e)))*e-4/3*I*d^2*polylog(2,I*exp(I*(f*x+e)))/a^2/f^3-4/3/a^2/f^3*d^2*e*ln(
exp(I*(f*x+e))+I)+4/3/a^2/f^3*d^2*e*ln(exp(I*(f*x+e)))
```

maxima [B] time = 1.41, size = 832, normalized size = 3.42

$$\frac{-2i\,c^2f^2-4i\,d^2+\left(4\,cdf\cos\left(3\,fx+3\,e\right)+12i\,cdf\cos\left(2\,fx+2\,e\right)-12\,cdf\cos\left(fx+e\right)+4i\,cdf\sin\left(3\,fx+3\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (-2*I*c^2*f^2 - 4*I*d^2 + (4*c*d*f*cos(3*f*x + 3*e) + 12*I*c*d*f*cos(2*f*x
+ 2*e) - 12*c*d*f*cos(f*x + e) + 4*I*c*d*f*sin(3*f*x + 3*e) - 12*c*d*f*sin(
2*f*x + 2*e) - 12*I*c*d*f*sin(f*x + e) - 4*I*c*d*f)*arctan2(sin(f*x + e) +
1, cos(f*x + e)) - (4*d^2*f*x*cos(3*f*x + 3*e) + 12*I*d^2*f*x*cos(2*f*x + 2
*e) - 12*d^2*f*x*cos(f*x + e) + 4*I*d^2*f*x*sin(3*f*x + 3*e) - 12*d^2*f*x*s
in(2*f*x + 2*e) - 12*I*d^2*f*x*sin(f*x + e) - 4*I*d^2*f*x)*arctan2(cos(f*x
+ e), sin(f*x + e) + 1) - 2*(d^2*f^2*x^2 + 2*c*d*f^2*x)*cos(3*f*x + 3*e) +
(-6*I*d^2*f^2*x^2 - 4*c*d*f + 4*I*d^2 - 4*(3*I*c*d*f^2 + d^2*f)*x)*cos(2*f*
x + 2*e) - (6*c^2*f^2 + 4*I*d^2*f*x + 4*I*c*d*f + 8*d^2)*cos(f*x + e) - (4*
d^2*cos(3*f*x + 3*e) + 12*I*d^2*cos(2*f*x + 2*e) - 12*d^2*cos(f*x + e) + 4*
I*d^2*sin(3*f*x + 3*e) - 12*d^2*sin(2*f*x + 2*e) - 12*I*d^2*sin(f*x + e) -
4*I*d^2)*dilog(I*e^(I*f*x + I*e)) - (2*d^2*f*x + 2*c*d*f - (-2*I*d^2*f*x -
2*I*c*d*f)*cos(3*f*x + 3*e) - 6*(d^2*f*x + c*d*f)*cos(2*f*x + 2*e) - (6*I*d
^2*f*x + 6*I*c*d*f)*cos(f*x + e) - 2*(d^2*f*x + c*d*f)*sin(3*f*x + 3*e) - (
6*I*d^2*f*x + 6*I*c*d*f)*sin(2*f*x + 2*e) + 6*(d^2*f*x + c*d*f)*sin(f*x + e
```

```
))*log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*x + e) + 1) + (-2*I*d^2*f^
2*x^2 - 4*I*c*d*f^2*x)*sin(3*f*x + 3*e) + (6*d^2*f^2*x^2 - 4*I*c*d*f - 4*d^
2 + (12*c*d*f^2 - 4*I*d^2*f)*x)*sin(2*f*x + 2*e) + (-6*I*c^2*f^2 + 4*d^2*f*
x + 4*c*d*f - 8*I*d^2)*sin(f*x + e))/(-3*I*a^2*f^3*cos(3*f*x + 3*e) + 9*a^2
*f^3*cos(2*f*x + 2*e) + 9*I*a^2*f^3*cos(f*x + e) + 3*a^2*f^3*sin(3*f*x + 3*
e) + 9*I*a^2*f^3*sin(2*f*x + 2*e) - 9*a^2*f^3*sin(f*x + e) - 3*a^2*f^3)
```

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

Hanged

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] \text{Hanged}
```

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

$$\frac{\int \frac{c^2}{\sin^2\left(e+fx\right)+2\sin\left(e+fx\right)+1}\,dx + \int \frac{d^2x^2}{\sin^2\left(e+fx\right)+2\sin\left(e+fx\right)+1}\,dx + \int \frac{2cdx}{\sin^2\left(e+fx\right)+2\sin\left(e+fx\right)+1}\,dx}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (Integral(c**2/(sin(e + f*x)**2 + 2*sin(e + f*x) + 1), x) + Integral(d**2*x
**2/(sin(e + f*x)**2 + 2*sin(e + f*x) + 1), x) + Integral(2*c*d*x/(sin(e +
f*x)**2 + 2*sin(e + f*x) + 1), x))/a**2
```

3.114 $\int \frac{c+dx}{(a+a\sin(e+fx))^2}\,dx$

Optimal. Leaf size=148

$$-\frac{(c+dx)\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{3a^2f}-\frac{(c+dx)\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\csc^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{6a^2f}-\frac{d\csc^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{6a^2f^2}+\frac{2d\log\left(\sin\left(\frac{e}{2}\right.\right.}{3a^2f}$$

```
[Out] -1/3*(d*x+c)*cot(1/2*e+1/4*Pi+1/2*f*x)/a^2/f-1/6*d*csc(1/2*e+1/4*Pi+1/2*f*x
)^2/a^2/f^2-1/6*(d*x+c)*cot(1/2*e+1/4*Pi+1/2*f*x)*csc(1/2*e+1/4*Pi+1/2*f*x)
^2/a^2/f+2/3*d*ln(sin(1/2*e+1/4*Pi+1/2*f*x))/a^2/f^2
```

Rubi [A] time = 0.09, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3318, 4185, 4184, 3475}

$$-\frac{(c+dx)\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{3a^2f}-\frac{(c+dx)\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\csc^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{6a^2f}-\frac{d\csc^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{6a^2f^2}+\frac{2d\log\left(\sin\left(\frac{e}{2}\right.\right.}{3a^2f}$$

Antiderivative was successfully verified.

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

```
[Out] -((c + d*x)*Cot[e/2 + Pi/4 + (f*x)/2])/(3*a^2*f) - (d*Csc[e/2 + Pi/4 + (f*x
)/2]^2)/(6*a^2*f^2) - ((c + d*x)*Cot[e/2 + Pi/4 + (f*x)/2]*Csc[e/2 + Pi/4 +
 (f*x)/2]^2)/(6*a^2*f) + (2*d*Log[Sin[e/2 + Pi/4 + (f*x)/2]])/(3*a^2*f^2)
```

Rule 3318

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

Rule 3475

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

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rubi steps

$$\int \frac{c+dx}{(a+a\sin(e+fx))^2}\,dx = \frac{\int (c+dx)\csc^4\left(\frac{1}{2}\left(e+\frac{\pi}{2}\right)+\frac{fx}{2}\right)dx}{4a^2}$$
$$= -\frac{d\csc^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{6a^2f^2} - \frac{(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\csc^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{6a^2f} + \frac{\int (c+dx)\,\mathrm{cs}}{}$$
$$= -\frac{(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d\csc^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{6a^2f^2} - \frac{(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\csc^2\left(\right.}{6a^2f}$$
$$= -\frac{(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{3a^2f} - \frac{d\csc^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{6a^2f^2} - \frac{(c+dx)\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\csc^2\left(\right.}{6a^2f}$$

Mathematica [A] time = 1.19, size = 225, normalized size = 1.52

$$-\frac{\left(\sin\left(\frac{1}{2}(e+fx)\right)+\cos\left(\frac{1}{2}(e+fx)\right)\right)\left(\cos\left(\frac{3}{2}(e+fx)\right)\left(2cf+2d\log\left(\sin\left(\frac{1}{2}(e+fx)\right)+\cos\left(\frac{1}{2}(e+fx)\right)\right)-de+\right.\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] -1/6*((Cos[(e + f*x)/2] + Sin[(e + f*x)/2])*(d*Cos[(e + f*x)/2]*(2 + 3*e +
3*f*x - 6*Log[Cos[(e + f*x)/2] + Sin[(e + f*x)/2]]) + Cos[(3*(e + f*x))/2]*
(-(d*e) + 2*c*f + d*f*x + 2*d*Log[Cos[(e + f*x)/2] + Sin[(e + f*x)/2]]) + 2
*(d + 2*d*e - 3*c*f - d*f*x + d*Cos[e + f*x]*(e + f*x - 2*Log[Cos[(e + f*x)
/2] + Sin[(e + f*x)/2]]) - 4*d*Log[Cos[(e + f*x)/2] + Sin[(e + f*x)/2]])*Si
n[(e + f*x)/2]))/(a^2*f^2*(1 + Sin[e + f*x])^2)
```

fricas [A] time = 0.69, size = 204, normalized size = 1.38

$$\frac{dfx+\left(dfx+cf\right)\cos\left(fx+e\right)^2+cf+\left(2\,dfx+2\,cf+d\right)\cos\left(fx+e\right)+\left(d\cos\left(fx+e\right)^2-d\cos\left(fx+e\right)-\left(d\,\mathrm{c}\right.\right.}{3\left(a^2f^2\cos\left(fx+e\right)^2-a^2f^2\cos\left(fx+e\right)-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 41.37, size = 3094, normalized size = 20.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/3*(2*d*f*x*tan(1/2*f*x)^3*tan(1/2*e)^3 + 2*c*f*tan(1/2*f*x)^3*tan(1/2*e)
^3 - d*log(2*(tan(1/2*f*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2
*tan(1/2*f*x)^3*tan(1/2*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)
^2 + 2*tan(1/2*f*x)^3 - 2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + ta
n(1/2*e)^2 + 2*tan(1/2*f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2
*f*x)^3*tan(1/2*e)^3 - 6*d*f*x*tan(1/2*f*x)^2*tan(1/2*e)^2 + 3*d*log(2*(tan
(1/2*f*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*t
an(1/2*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*
x)^3 - 2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*ta
n(1/2*f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*f*x)^3*tan(1/2*e
)^2 + 3*d*log(2*(tan(1/2*f*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e)
- 2*tan(1/2*f*x)^3*tan(1/2*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2
*e)^2 + 2*tan(1/2*f*x)^3 - 2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 +
 tan(1/2*e)^2 + 2*tan(1/2*f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(
1/2*f*x)^2*tan(1/2*e)^3 + d*tan(1/2*f*x)^3*tan(1/2*e)^3 + 2*d*f*x*tan(1/2*f
*x)^3 + 6*d*f*x*tan(1/2*f*x)^2*tan(1/2*e) - 3*d*log(2*(tan(1/2*f*x)^4*tan(1
/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*tan(1/2*e)^2 + tan
(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)^3 - 2*tan(1/2*
f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*tan(1/2*f*x) + 2*ta
n(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*f*x)^3*tan(1/2*e) + 6*d*f*x*tan(1
/2*f*x)*tan(1/2*e)^2 - 6*c*f*tan(1/2*f*x)^2*tan(1/2*e)^2 - 3*d*log(2*(tan(1
/2*f*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*tan
(1/2*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)
^3 - 2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*tan(
1/2*f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*f*x)^2*tan(1/2*e)^
2 - d*tan(1/2*f*x)^3*tan(1/2*e)^2 + 2*d*f*x*tan(1/2*e)^3 - 3*d*log(2*(tan(1
/2*f*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*tan
(1/2*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)
```

^3 - 2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*tan(
1/2*f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*f*x)*tan(1/2*e)^3
- d*tan(1/2*f*x)^2*tan(1/2*e)^3 + 2*c*f*tan(1/2*f*x)^3 + d*log(2*(tan(1/2*f
*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*tan(1/2
*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)^3 -
2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*tan(1/2*
f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*f*x)^3 + 6*d*f*x*tan(1
/2*f*x)*tan(1/2*e) + 6*c*f*tan(1/2*f*x)^2*tan(1/2*e) - 3*d*log(2*(tan(1/2*f
*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*tan(1/2
*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)^3 -
2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*tan(1/2*
f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*f*x)^2*tan(1/2*e) + d*
tan(1/2*f*x)^3*tan(1/2*e) + 6*c*f*tan(1/2*f*x)*tan(1/2*e)^2 - 3*d*log(2*(ta
n(1/2*f*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*
tan(1/2*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f
*x)^3 - 2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*t
an(1/2*f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*f*x)*tan(1/2*e)
^2 - d*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*c*f*tan(1/2*e)^3 + d*log(2*(tan(1/2*
f*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*tan(1/
2*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)^3
- 2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*tan(1/2
*f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*e)^3 + d*tan(1/2*f*x)
*tan(1/2*e)^3 + 3*d*log(2*(tan(1/2*f*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*t
an(1/2*e) - 2*tan(1/2*f*x)^3*tan(1/2*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)
^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)^3 - 2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/
2*f*x)^2 + tan(1/2*e)^2 + 2*tan(1/2*f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2
+ 1))*tan(1/2*f*x)^2 - d*tan(1/2*f*x)^3 + 6*c*f*tan(1/2*f*x)*tan(1/2*e) + 3
*d*log(2*(tan(1/2*f*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan
(1/2*f*x)^3*tan(1/2*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 +
2*tan(1/2*f*x)^3 - 2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/
2*e)^2 + 2*tan(1/2*f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*f*x
)*tan(1/2*e) - d*tan(1/2*f*x)^2*tan(1/2*e) + 3*d*log(2*(tan(1/2*f*x)^4*tan(
1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*tan(1/2*e)^2 + ta
n(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)^3 - 2*tan(1/2
*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*tan(1/2*f*x) + 2*t
an(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*e)^2 - d*tan(1/2*f*x)*tan(1/2*e)
^2 - d*tan(1/2*e)^3 - 2*d*f*x + 3*d*log(2*(tan(1/2*f*x)^4*tan(1/2*e)^2 - 2*
tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*tan(1/2*e)^2 + tan(1/2*f*x)^4
+ 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)^3 - 2*tan(1/2*f*x)*tan(1/2
*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*tan(1/2*f*x) + 2*tan(1/2*e) + 1
)/(tan(1/2*e)^2 + 1))*tan(1/2*f*x) - d*tan(1/2*f*x)^2 + 3*d*log(2*(tan(1/2*
f*x)^4*tan(1/2*e)^2 - 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*tan(1/
2*e)^2 + tan(1/2*f*x)^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)^3
- 2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*tan(1/2
*f*x) + 2*tan(1/2*e) + 1)/(tan(1/2*e)^2 + 1))*tan(1/2*e) + d*tan(1/2*f*x)*t

```
an(1/2*e) - d*tan(1/2*e)^2 - 2*c*f + d*log(2*(tan(1/2*f*x)^4*tan(1/2*e)^2 -
 2*tan(1/2*f*x)^4*tan(1/2*e) - 2*tan(1/2*f*x)^3*tan(1/2*e)^2 + tan(1/2*f*x)
^4 + 2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*tan(1/2*f*x)^3 - 2*tan(1/2*f*x)*tan(
1/2*e)^2 + 2*tan(1/2*f*x)^2 + tan(1/2*e)^2 + 2*tan(1/2*f*x) + 2*tan(1/2*e)
+ 1)/(tan(1/2*e)^2 + 1)) - d*tan(1/2*f*x) - d*tan(1/2*e) - d)/(a^2*f^2*tan(
1/2*f*x)^3*tan(1/2*e)^3 - 3*a^2*f^2*tan(1/2*f*x)^3*tan(1/2*e)^2 - 3*a^2*f^2
*tan(1/2*f*x)^2*tan(1/2*e)^3 + 3*a^2*f^2*tan(1/2*f*x)^3*tan(1/2*e) + 3*a^2*
f^2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 3*a^2*f^2*tan(1/2*f*x)*tan(1/2*e)^3 - a^2
*f^2*tan(1/2*f*x)^3 + 3*a^2*f^2*tan(1/2*f*x)^2*tan(1/2*e) + 3*a^2*f^2*tan(1
/2*f*x)*tan(1/2*e)^2 - a^2*f^2*tan(1/2*e)^3 - 3*a^2*f^2*tan(1/2*f*x)^2 - 3*
a^2*f^2*tan(1/2*f*x)*tan(1/2*e) - 3*a^2*f^2*tan(1/2*e)^2 - 3*a^2*f^2*tan(1/
2*f*x) - 3*a^2*f^2*tan(1/2*e) - a^2*f^2)
```

maple [B] time = 0.39, size = 233, normalized size = 1.57

$$\frac{2c}{a^2 f\left(\tan\left(\frac{fx}{2}+\frac{e}{2}\right)+1\right)^2}-\frac{4c}{3a^2 f\left(\tan\left(\frac{fx}{2}+\frac{e}{2}\right)+1\right)^3}-\frac{2c}{a^2 f\left(\tan\left(\frac{fx}{2}+\frac{e}{2}\right)+1\right)}-\frac{2xd}{3a^2\left(\tan\left(\frac{fx}{2}+\frac{e}{2}\right)+1\right)^3 f}+\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [B] time = 1.79, size = 910, normalized size = 6.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
(3*cos(2*f*x + 2*e) - 3*sin(f*x + e) - 1)*sin(3*f*x + 3*e) - sin(3*f*x + 3*
e)^2 - 18*cos(f*x + e)*sin(2*f*x + 2*e) - 9*sin(2*f*x + 2*e)^2 - 9*sin(f*x
+ e)^2 - 6*sin(f*x + e) - 1)*log(cos(f*x + e)^2 + sin(f*x + e)^2 + 2*sin(f*
x + e) + 1) - 2*(3*(f*x + e)*cos(f*x + e) + cos(2*f*x + 2*e) - sin(f*x + e)
)*sin(3*f*x + 3*e) - 6*(f*x + 3*(f*x + e)*sin(f*x + e) + e + 2*cos(f*x + e)
)*sin(2*f*x + 2*e) - 6*sin(2*f*x + 2*e)^2 - 6*sin(f*x + e)^2 - 2*sin(f*x +
e))*d/(a^2*f*cos(3*f*x + 3*e)^2 + 9*a^2*f*cos(2*f*x + 2*e)^2 + 9*a^2*f*cos(
f*x + e)^2 + a^2*f*sin(3*f*x + 3*e)^2 + 18*a^2*f*cos(f*x + e)*sin(2*f*x + 2
*e) + 9*a^2*f*sin(2*f*x + 2*e)^2 + 9*a^2*f*sin(f*x + e)^2 + 6*a^2*f*sin(f*x
 + e) + a^2*f - 6*(a^2*f*cos(f*x + e) + a^2*f*sin(2*f*x + 2*e))*cos(3*f*x +
 3*e) - 6*(3*a^2*f*sin(f*x + e) + a^2*f)*cos(2*f*x + 2*e) + 2*(3*a^2*f*cos(
2*f*x + 2*e) - 3*a^2*f*sin(f*x + e) - a^2*f)*sin(3*f*x + 3*e)) - 2*c*(3*sin
(f*x + e)/(cos(f*x + e) + 1) + 3*sin(f*x + e)^2/(cos(f*x + e) + 1)^2 + 2)/(
a^2 + 3*a^2*sin(f*x + e)/(cos(f*x + e) + 1) + 3*a^2*sin(f*x + e)^2/(cos(f*x
 + e) + 1)^2 + a^2*sin(f*x + e)^3/(cos(f*x + e) + 1)^3))/f
```

mupad [B] time = 4.81, size = 183, normalized size = 1.24

$$\frac{2\,d\,\ln\left(e^{e\,1i}\,e^{f\,x\,1i}+1i\right)}{3\,a^2\,f^2}-\frac{\left(c\,f+d\,f\,x-d\,1i\right)\,2i}{3\,a^2\,f^2\,\left(e^{e\,2i+f\,x\,2i}-1+e^{e\,1i+f\,x\,1i}\,2i\right)}-\frac{d\,x\,2i}{3\,a^2\,f}-\frac{d\,2i}{3\,a^2\,f^2\,\left(e^{e\,1i+f\,x\,1i}+1i\right)}+\frac{e^{e\,1}}{3\,a^2\,f\,\left(3\,e^{e\,1i+f\,x\,1}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (2*d*log(exp(e*1i)*exp(f*x*1i) + 1i))/(3*a^2*f^2) - ((c*f - d*1i + d*f*x)*2
i)/(3*a^2*f^2*(exp(e*1i + f*x*1i)*2i + exp(e*2i + f*x*2i) - 1)) - (d*x*2i)/
(3*a^2*f) - (d*2i)/(3*a^2*f^2*(exp(e*1i + f*x*1i) + 1i)) + (exp(e*1i + f*x*
1i)*(c + d*x)*4i)/(3*a^2*f*(3*exp(e*1i + f*x*1i) - exp(e*2i + f*x*2i)*3i -
exp(e*3i + f*x*3i) + 1i))
```

sympy [A] time = 2.31, size = 1336, normalized size = 9.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((-6*c*f*tan(e/2 + f*x/2)**2/(3*a**2*f**2*tan(e/2 + f*x/2)**3 + 9*
a**2*f**2*tan(e/2 + f*x/2)**2 + 9*a**2*f**2*tan(e/2 + f*x/2) + 3*a**2*f**2)
 - 6*c*f*tan(e/2 + f*x/2)/(3*a**2*f**2*tan(e/2 + f*x/2)**3 + 9*a**2*f**2*ta
n(e/2 + f*x/2)**2 + 9*a**2*f**2*tan(e/2 + f*x/2) + 3*a**2*f**2) - 4*c*f/(3*
a**2*f**2*tan(e/2 + f*x/2)**3 + 9*a**2*f**2*tan(e/2 + f*x/2)**2 + 9*a**2*f*
*2*tan(e/2 + f*x/2) + 3*a**2*f**2) + 2*d*f*x*tan(e/2 + f*x/2)**3/(3*a**2*f*
*2*tan(e/2 + f*x/2)**3 + 9*a**2*f**2*tan(e/2 + f*x/2)**2 + 9*a**2*f**2*tan(
```

```
e/2 + f*x/2) + 3*a**2*f**2) - 2*d*f*x/(3*a**2*f**2*tan(e/2 + f*x/2)**3 + 9*
a**2*f**2*tan(e/2 + f*x/2)**2 + 9*a**2*f**2*tan(e/2 + f*x/2) + 3*a**2*f**2)
 + 2*d*log(tan(e/2 + f*x/2) + 1)*tan(e/2 + f*x/2)**3/(3*a**2*f**2*tan(e/2 +
 f*x/2)**3 + 9*a**2*f**2*tan(e/2 + f*x/2)**2 + 9*a**2*f**2*tan(e/2 + f*x/2)
 + 3*a**2*f**2) + 6*d*log(tan(e/2 + f*x/2) + 1)*tan(e/2 + f*x/2)**2/(3*a**2
*f**2*tan(e/2 + f*x/2)**3 + 9*a**2*f**2*tan(e/2 + f*x/2)**2 + 9*a**2*f**2*t
an(e/2 + f*x/2) + 3*a**2*f**2) + 6*d*log(tan(e/2 + f*x/2) + 1)*tan(e/2 + f*
x/2)/(3*a**2*f**2*tan(e/2 + f*x/2)**3 + 9*a**2*f**2*tan(e/2 + f*x/2)**2 + 9
*a**2*f**2*tan(e/2 + f*x/2) + 3*a**2*f**2) + 2*d*log(tan(e/2 + f*x/2) + 1)/
(3*a**2*f**2*tan(e/2 + f*x/2)**3 + 9*a**2*f**2*tan(e/2 + f*x/2)**2 + 9*a**2
*f**2*tan(e/2 + f*x/2) + 3*a**2*f**2) - d*log(tan(e/2 + f*x/2)**2 + 1)*tan(
e/2 + f*x/2)**3/(3*a**2*f**2*tan(e/2 + f*x/2)**3 + 9*a**2*f**2*tan(e/2 + f*
x/2)**2 + 9*a**2*f**2*tan(e/2 + f*x/2) + 3*a**2*f**2) - 3*d*log(tan(e/2 + f
*x/2)**2 + 1)*tan(e/2 + f*x/2)**2/(3*a**2*f**2*tan(e/2 + f*x/2)**3 + 9*a**2
*f**2*tan(e/2 + f*x/2)**2 + 9*a**2*f**2*tan(e/2 + f*x/2) + 3*a**2*f**2) - 3
*d*log(tan(e/2 + f*x/2)**2 + 1)*tan(e/2 + f*x/2)/(3*a**2*f**2*tan(e/2 + f*x
/2)**3 + 9*a**2*f**2*tan(e/2 + f*x/2)**2 + 9*a**2*f**2*tan(e/2 + f*x/2) + 3
*a**2*f**2) - d*log(tan(e/2 + f*x/2)**2 + 1)/(3*a**2*f**2*tan(e/2 + f*x/2)*
*3 + 9*a**2*f**2*tan(e/2 + f*x/2)**2 + 9*a**2*f**2*tan(e/2 + f*x/2) + 3*a**
2*f**2) + 2*d*tan(e/2 + f*x/2)**2/(3*a**2*f**2*tan(e/2 + f*x/2)**3 + 9*a**2
*f**2*tan(e/2 + f*x/2)**2 + 9*a**2*f**2*tan(e/2 + f*x/2) + 3*a**2*f**2) + 2
*d*tan(e/2 + f*x/2)/(3*a**2*f**2*tan(e/2 + f*x/2)**3 + 9*a**2*f**2*tan(e/2
+ f*x/2)**2 + 9*a**2*f**2*tan(e/2 + f*x/2) + 3*a**2*f**2), Ne(f, 0)), ((c*x
 + d*x**2/2)/(a*sin(e) + a)**2, True))
```

3.115 $\int \frac{1}{(c+dx)(a+a\sin(e+fx))^2}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c+dx)(a\sin(e+fx)+a)^2},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)/(a+a*sin(f*x+e))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)(a+a\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)*(a + a*Sin[e + f*x])^2),x]
```

```
[Out] Defer[Int][1/((c + d*x)*(a + a*Sin[e + f*x])^2), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)(a+a\sin(e+fx))^2}\,dx = \int \frac{1}{(c+dx)(a+a\sin(e+fx))^2}\,dx$$

Mathematica [A] time = 15.15, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)(a+a\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)*(a + a*Sin[e + f*x])^2),x]
```

```
[Out] Integrate[1/((c + d*x)*(a + a*Sin[e + f*x])^2), x]
```

fricas [A] time = 0.83, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{2\,a^2dx+2\,a^2c-\left(a^2dx+a^2c\right)\cos\left(fx+e\right)^2+2\left(a^2dx+a^2c\right)\sin\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+a*sin(f*x+e))^2,x, algorithm="fricas")
```

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

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+a*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)*(a*sin(f*x + e) + a)^2), x)
```

maple [A] time = 4.73, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)/(a+a*sin(f*x+e))^2,x)
```

```
[Out] int(1/(d*x+c)/(a+a*sin(f*x+e))^2,x)
```

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

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+a*sin(f*x+e))^2,x, algorithm="maxima")
```

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

```
*x + e)^2 + (a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^
2*c^3*f^3)*sin(3*f*x + 3*e)^2 + 18*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 +
 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*cos(f*x + e)*sin(2*f*x + 2*e) + 9*(a^2*d^
3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*sin(2*f*
x + 2*e)^2 + 9*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x +
 a^2*c^3*f^3)*sin(f*x + e)^2 - 6*((a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 +
3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*cos(f*x + e) + (a^2*d^3*f^3*x^3 + 3*a^2*c*
d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*sin(2*f*x + 2*e))*cos(3*f*x
+ 3*e) - 6*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2
*c^3*f^3 + 3*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a
^2*c^3*f^3)*sin(f*x + e))*cos(2*f*x + 2*e) - 2*(a^2*d^3*f^3*x^3 + 3*a^2*c*d
^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3 - 3*(a^2*d^3*f^3*x^3 + 3*a^2*c
*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*cos(2*f*x + 2*e) + 3*(a^2*d
^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*sin(f*x
 + e))*sin(3*f*x + 3*e) + 6*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*
c^2*d*f^3*x + a^2*c^3*f^3)*sin(f*x + e))*integrate(2/3*(d^3*f^2*x^2 + 2*c*d
^2*f^2*x + c^2*d*f^2 + 6*d^3)*cos(f*x + e)/(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f
^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3 + (a^2*d^4
*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x
+ a^2*c^4*f^3)*cos(f*x + e)^2 + (a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*
a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(f*x + e)^2 + 2*(
a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d
*f^3*x + a^2*c^4*f^3)*sin(f*x + e)), x) - 2*(2*d^2*sin(2*f*x + 2*e) - (d^2*
f*x + c*d*f)*cos(2*f*x + 2*e) + (3*d^2*f^2*x^2 + 6*c*d*f^2*x + 3*c^2*f^2 +
4*d^2)*cos(f*x + e) + (d^2*f*x + c*d*f)*sin(f*x + e))*sin(3*f*x + 3*e) - 2*
(3*d^2*f^2*x^2 + 6*c*d*f^2*x + 3*c^2*f^2 + 4*d^2 - 6*(d^2*f*x + c*d*f)*cos(
f*x + e) + 3*(3*d^2*f^2*x^2 + 6*c*d*f^2*x + 3*c^2*f^2 + 2*d^2)*sin(f*x + e)
)*sin(2*f*x + 2*e) + 2*(d^2*f*x + c*d*f)*sin(f*x + e))/(a^2*d^3*f^3*x^3 + 3
*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3 + (a^2*d^3*f^3*x^3 + 3
*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*cos(3*f*x + 3*e)^2 +
9*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)
*cos(2*f*x + 2*e)^2 + 9*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*
d*f^3*x + a^2*c^3*f^3)*cos(f*x + e)^2 + (a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*
x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*sin(3*f*x + 3*e)^2 + 18*(a^2*d^3*f^3
*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*cos(f*x + e)*
sin(2*f*x + 2*e) + 9*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f
^3*x + a^2*c^3*f^3)*sin(2*f*x + 2*e)^2 + 9*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f
^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*sin(f*x + e)^2 - 6*((a^2*d^3*f^3*
x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*cos(f*x + e) +
 (a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*
sin(2*f*x + 2*e))*cos(3*f*x + 3*e) - 6*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x
^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3 + 3*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3
*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*sin(f*x + e))*cos(2*f*x + 2*e) - 2*
(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3 -
3*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)
```

```
*cos(2*f*x + 2*e) + 3*(a^2*d^3*f^3*x^3 + 3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*
f^3*x + a^2*c^3*f^3)*sin(f*x + e))*sin(3*f*x + 3*e) + 6*(a^2*d^3*f^3*x^3 +
3*a^2*c*d^2*f^3*x^2 + 3*a^2*c^2*d*f^3*x + a^2*c^3*f^3)*sin(f*x + e))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a + a\,\sin\left(e + f\,x\right)\right)^2\,\left(c + d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a*sin(e + f*x))^2*(c + d*x)),x)
```

```
[Out] int(1/((a + a*sin(e + f*x))^2*(c + d*x)), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+a*sin(f*x+e))**2,x)
```

```
[Out] Integral(1/(c*sin(e + f*x)**2 + 2*c*sin(e + f*x) + c + d*x*sin(e + f*x)**2
+ 2*d*x*sin(e + f*x) + d*x), x)/a**2
```

3.116 $\int \frac{1}{(c+dx)^2(a+a\sin(e+fx))^2}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c+dx)^2(a\sin(e+fx)+a)^2},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)^2/(a+a*sin(f*x+e))^2,x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)^2(a+a\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)^2*(a + a*Sin[e + f*x])^2),x]
```

```
[Out] Defer[Int][1/((c + d*x)^2*(a + a*Sin[e + f*x])^2), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)^2(a+a\sin(e+fx))^2}\,dx = \int \frac{1}{(c+dx)^2(a+a\sin(e+fx))^2}\,dx$$

Mathematica [A] time = 16.16, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)^2(a+a\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)^2*(a + a*Sin[e + f*x])^2),x]
```

```
[Out] Integrate[1/((c + d*x)^2*(a + a*Sin[e + f*x])^2), x]
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{2\,a^2d^2x^2+4\,a^2cdx+2\,a^2c^2-\left(a^2d^2x^2+2\,a^2cdx+a^2c^2\right)\cos\left(fx+e\right)^2+2\left(a^2d^2x^2+2\,a^2cdx+a^2c^2\right)\sin\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+a*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral(1/(2*a^2*d^2*x^2 + 4*a^2*c*d*x + 2*a^2*c^2 - (a^2*d^2*x^2 + 2*a^2*
c*d*x + a^2*c^2)*cos(f*x + e)^2 + 2*(a^2*d^2*x^2 + 2*a^2*c*d*x + a^2*c^2)*s
in(f*x + e)), x)
```

giac [**A**] time = 0.00, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+a*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)^2*(a*sin(f*x + e) + a)^2), x)
```

maple [**A**] time = 7.20, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^2/(a+a*sin(f*x+e))^2,x)
```

```
[Out] int(1/(d*x+c)^2/(a+a*sin(f*x+e))^2,x)
```

maxima [**A**] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+a*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/3*(12*(d^2*f*x + c*d*f)*cos(2*f*x + 2*e)^2 - 12*d^2*cos(f*x + e) + 12*(d^
2*f*x + c*d*f)*cos(f*x + e)^2 + 12*(d^2*f*x + c*d*f)*sin(2*f*x + 2*e)^2 + 1
2*(d^2*f*x + c*d*f)*sin(f*x + e)^2 + 2*(d^2*f^2*x^2 + 2*c*d*f^2*x + c^2*f^2
 - 6*d^2*cos(2*f*x + 2*e) + 6*d^2 - 2*(d^2*f*x + c*d*f)*cos(f*x + e) - 2*(d
^2*f*x + c*d*f)*sin(2*f*x + 2*e) + 3*(d^2*f^2*x^2 + 2*c*d*f^2*x + c^2*f^2 +
 4*d^2)*sin(f*x + e))*cos(3*f*x + 3*e) - 2*(2*d^2*f*x + 2*c*d*f + 9*(d^2*f^
2*x^2 + 2*c*d*f^2*x + c^2*f^2 + 2*d^2)*cos(f*x + e) + 12*(d^2*f*x + c*d*f)*
sin(f*x + e))*cos(2*f*x + 2*e) - 3*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 +
 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3 + (a^2*d^4*f^3*x^4
 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^
4*f^3)*cos(3*f*x + 3*e)^2 + 9*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^
```

2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*cos(2*f*x + 2*e)^2 + 9
*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3
*d*f^3*x + a^2*c^4*f^3)*cos(f*x + e)^2 + (a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3
*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(3*f*x +
3*e)^2 + 18*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2
+ 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*cos(f*x + e)*sin(2*f*x + 2*e) + 9*(a^2*
d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3
*x + a^2*c^4*f^3)*sin(2*f*x + 2*e)^2 + 9*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3
*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(f*x + e
)^2 - 6*((a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4
*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*cos(f*x + e) + (a^2*d^4*f^3*x^4 + 4*a^2*c*d
^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(2
*f*x + 2*e))*cos(3*f*x + 3*e) - 6*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 +
6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3 + 3*(a^2*d^4*f^3*x^
4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c
^4*f^3)*sin(f*x + e))*cos(2*f*x + 2*e) - 2*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f
^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3 - 3*(a^2*d
^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*
x + a^2*c^4*f^3)*cos(2*f*x + 2*e) + 3*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^
3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(f*x + e))*
sin(3*f*x + 3*e) + 6*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2
*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(f*x + e))*integrate(4/3*(d^
3*f^2*x^2 + 2*c*d^2*f^2*x + c^2*d*f^2 + 12*d^3)*cos(f*x + e)/(a^2*d^5*f^3*x
^5 + 5*a^2*c*d^4*f^3*x^4 + 10*a^2*c^2*d^3*f^3*x^3 + 10*a^2*c^3*d^2*f^3*x^2
+ 5*a^2*c^4*d*f^3*x + a^2*c^5*f^3 + (a^2*d^5*f^3*x^5 + 5*a^2*c*d^4*f^3*x^4
+ 10*a^2*c^2*d^3*f^3*x^3 + 10*a^2*c^3*d^2*f^3*x^2 + 5*a^2*c^4*d*f^3*x + a^2
*c^5*f^3)*cos(f*x + e)^2 + (a^2*d^5*f^3*x^5 + 5*a^2*c*d^4*f^3*x^4 + 10*a^2*
c^2*d^3*f^3*x^3 + 10*a^2*c^3*d^2*f^3*x^2 + 5*a^2*c^4*d*f^3*x + a^2*c^5*f^3)
*sin(f*x + e)^2 + 2*(a^2*d^5*f^3*x^5 + 5*a^2*c*d^4*f^3*x^4 + 10*a^2*c^2*d^3
*f^3*x^3 + 10*a^2*c^3*d^2*f^3*x^2 + 5*a^2*c^4*d*f^3*x + a^2*c^5*f^3)*sin(f*
x + e)), x) - 2*(6*d^2*sin(2*f*x + 2*e) - 2*(d^2*f*x + c*d*f)*cos(2*f*x + 2
e) + 3(d^2*f^2*x^2 + 2*c*d*f^2*x + c^2*f^2 + 4*d^2)*cos(f*x + e) + 2*(d^2
*f*x + c*d*f)*sin(f*x + e))*sin(3*f*x + 3*e) - 6*(d^2*f^2*x^2 + 2*c*d*f^2*x
+ c^2*f^2 + 4*d^2 - 4*(d^2*f*x + c*d*f)*cos(f*x + e) + 3*(d^2*f^2*x^2 + 2*
c*d*f^2*x + c^2*f^2 + 2*d^2)*sin(f*x + e))*sin(2*f*x + 2*e) + 4*(d^2*f*x +
c*d*f)*sin(f*x + e))/(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2
*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3 + (a^2*d^4*f^3*x^4 + 4*a^2*c*d^3
*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*cos(3*f
*x + 3*e)^2 + 9*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*
x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*cos(2*f*x + 2*e)^2 + 9*(a^2*d^4*f^3*
x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2
*c^4*f^3)*cos(f*x + e)^2 + (a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c
^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(3*f*x + 3*e)^2 + 18*(
a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d
*f^3*x + a^2*c^4*f^3)*cos(f*x + e)*sin(2*f*x + 2*e) + 9*(a^2*d^4*f^3*x^4 +

```
4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f
^3)*sin(2*f*x + 2*e)^2 + 9*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c
^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(f*x + e)^2 - 6*((a^2*
d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3
*x + a^2*c^4*f^3)*cos(f*x + e) + (a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6
*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(2*f*x + 2*e))*c
os(3*f*x + 3*e) - 6*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*
f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3 + 3*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^
3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(f*
x + e))*cos(2*f*x + 2*e) - 2*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2
*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3 - 3*(a^2*d^4*f^3*x^4 + 4
*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^
3)*cos(2*f*x + 2*e) + 3*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*
d^2*f^3*x^2 + 4*a^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(f*x + e))*sin(3*f*x + 3*
e) + 6*(a^2*d^4*f^3*x^4 + 4*a^2*c*d^3*f^3*x^3 + 6*a^2*c^2*d^2*f^3*x^2 + 4*a
^2*c^3*d*f^3*x + a^2*c^4*f^3)*sin(f*x + e))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+a\,\sin\left(e+f\,x\right)\right)^2\,\left(c+d\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a*sin(e + f*x))^2*(c + d*x)^2),x)
[Out] int(1/((a + a*sin(e + f*x))^2*(c + d*x)^2), x)
```

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

$$\frac{\int \frac{1}{c^2\sin^2\left(e+fx\right)+2c^2\sin\left(e+fx\right)+c^2+2cdx\sin^2\left(e+fx\right)+4cdx\sin\left(e+fx\right)+2cdx+d^2x^2\sin^2\left(e+fx\right)+2d^2x^2\sin\left(e+fx\right)+d^2x^2}\,dx}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)**2/(a+a*sin(f*x+e))**2,x)
[Out] Integral(1/(c**2*sin(e + f*x)**2 + 2*c**2*sin(e + f*x) + c**2 + 2*c*d*x*sin
(e + f*x)**2 + 4*c*d*x*sin(e + f*x) + 2*c*d*x + d**2*x**2*sin(e + f*x)**2 +
 2*d**2*x**2*sin(e + f*x) + d**2*x**2), x)/a**2
```

3.117 $\int \frac{(c+dx)^3}{a-a\sin(e+fx)}\,dx$

Optimal. Leaf size=147

$$-\frac{12id^2(c+dx)\text{Li}_2\left(-ie^{i(e+fx)}\right)}{af^3}+\frac{6d(c+dx)^2\log\left(1+ie^{i(e+fx)}\right)}{af^2}+\frac{(c+dx)^3\tan\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af}-\frac{i(c+dx)^3}{af}+\frac{12d^3\text{Li}_3\left(\cdots\right.}{a\cdots}$$

```
[Out] -I*(d*x+c)^3/a/f+6*d*(d*x+c)^2*ln(1+I*exp(I*(f*x+e)))/a/f^2-12*I*d^2*(d*x+c
)*polylog(2,-I*exp(I*(f*x+e)))/a/f^3+12*d^3*polylog(3,-I*exp(I*(f*x+e)))/a/
f^4+(d*x+c)^3*tan(1/2*e+1/4*Pi+1/2*f*x)/a/f
```

Rubi [A] time = 0.30, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3318, 4184, 3717, 2190, 2531, 2282, 6589}

$$-\frac{12id^2(c+dx)\text{PolyLog}\left(2,-ie^{i(e+fx)}\right)}{af^3}+\frac{12d^3\text{PolyLog}\left(3,-ie^{i(e+fx)}\right)}{af^4}+\frac{6d(c+dx)^2\log\left(1+ie^{i(e+fx)}\right)}{af^2}+\frac{(c+dx)^3\tan\cdots}{a\cdots}$$

Antiderivative was successfully verified.

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

```
[Out] ((-I)*(c + d*x)^3)/(a*f) + (6*d*(c + d*x)^2*Log[1 + I*E^(I*(e + f*x))])/(a*
f^2) - ((12*I)*d^2*(c + d*x)*PolyLog[2, (-I)*E^(I*(e + f*x))])/(a*f^3) + (1
2*d^3*PolyLog[3, (-I)*E^(I*(e + f*x))])/(a*f^4) + ((c + d*x)^3*Tan[e/2 + Pi
/4 + (f*x)/2])/(a*f)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

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

$$= \frac{(c+dx)^3 \tan\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af} + \frac{(3d)\int (c+dx)^2 \cot\left(\frac{e}{2}-\frac{\pi}{4}+\frac{fx}{2}\right)dx}{af}$$

$$= -\frac{i(c+dx)^3}{af} + \frac{(c+dx)^3 \tan\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af} - \frac{(6d)\int \frac{e^{2i\left(\frac{e}{2}+\frac{fx}{2}\right)}(c+dx)^2}{1+ie^{2i\left(\frac{e}{2}+\frac{fx}{2}\right)}}dx}{af}$$

$$= -\frac{i(c+dx)^3}{af} + \frac{6d(c+dx)^2\log\left(1+ie^{i(e+fx)}\right)}{af^2} + \frac{(c+dx)^3 \tan\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af} - \frac{\left(12d^2\right)\int (c$$

$$= -\frac{i(c+dx)^3}{af} + \frac{6d(c+dx)^2\log\left(1+ie^{i(e+fx)}\right)}{af^2} - \frac{12id^2(c+dx)\text{Li}_2\left(-ie^{i(e+fx)}\right)}{af^3} + \frac{(c+dx)^3}{}$$

$$= -\frac{i(c+dx)^3}{af} + \frac{6d(c+dx)^2\log\left(1+ie^{i(e+fx)}\right)}{af^2} - \frac{12id^2(c+dx)\text{Li}_2\left(-ie^{i(e+fx)}\right)}{af^3} + \frac{(c+dx)^3}{}$$

$$= -\frac{i(c+dx)^3}{af} + \frac{6d(c+dx)^2\log\left(1+ie^{i(e+fx)}\right)}{af^2} - \frac{12id^2(c+dx)\text{Li}_2\left(-ie^{i(e+fx)}\right)}{af^3} + \frac{12d^3\text{Li}_3\left(\right.}{a}$$

Mathematica [A] time = 1.26, size = 124, normalized size = 0.84

$$\frac{-12id^2f(c+dx)\text{Li}_2\left(-ie^{i(e+fx)}\right) + f^2(c+dx)^2\left(f(c+dx)\tan\left(\frac{1}{4}(2e+2fx+\pi)\right) - if(c+dx) + 6d\log\left(1+ie^{i(e+fx)}\right.\right.}{af^4}$$

Antiderivative was successfully verified.

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

```
[Out] ((-12*I)*d^2*f*(c + d*x)*PolyLog[2, (-I)*E^(I*(e + f*x))] + 12*d^3*PolyLog[
3, (-I)*E^(I*(e + f*x))] + f^2*(c + d*x)^2*((-I)*f*(c + d*x) + 6*d*Log[1 +
I*E^(I*(e + f*x))] + f*(c + d*x)*Tan[(2*e + Pi + 2*f*x)/4]))/(a*f^4)
```

fricas [C] time = 0.77, size = 916, normalized size = 6.23

$$\frac{d^3f^3x^3 + 3cd^2f^3x^2 + 3c^2df^3x + c^3f^3 + \left(d^3f^3x^3 + 3cd^2f^3x^2 + 3c^2df^3x + c^3f^3\right)\cos\left(fx+e\right) - \left(-6id^3fx - 6ic\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (d^3*f^3*x^3 + 3*c*d^2*f^3*x^2 + 3*c^2*d*f^3*x + c^3*f^3 + (d^3*f^3*x^3 + 3
*c*d^2*f^3*x^2 + 3*c^2*d*f^3*x + c^3*f^3)*cos(f*x + e) - (-6*I*d^3*f*x - 6*
I*c*d^2*f + (-6*I*d^3*f*x - 6*I*c*d^2*f)*cos(f*x + e) + (6*I*d^3*f*x + 6*I*
c*d^2*f)*sin(f*x + e))*dilog(I*cos(f*x + e) + sin(f*x + e)) - (6*I*d^3*f*x
+ 6*I*c*d^2*f + (6*I*d^3*f*x + 6*I*c*d^2*f)*cos(f*x + e) + (-6*I*d^3*f*x -
6*I*c*d^2*f)*sin(f*x + e))*dilog(-I*cos(f*x + e) + sin(f*x + e)) + 3*(d^3*e
^2 - 2*c*d^2*e*f + c^2*d*f^2 + (d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2)*cos(f*x
+ e) - (d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2)*sin(f*x + e))*log(cos(f*x + e) -
 I*sin(f*x + e) + I) + 3*(d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e
*f + (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*cos(f*x + e) - (
d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*sin(f*x + e))*log(I*co
s(f*x + e) - sin(f*x + e) + 1) + 3*(d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 +
 2*c*d^2*e*f + (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*cos(f*
x + e) - (d^3*f^2*x^2 + 2*c*d^2*f^2*x - d^3*e^2 + 2*c*d^2*e*f)*sin(f*x + e)
)*log(-I*cos(f*x + e) - sin(f*x + e) + 1) + 3*(d^3*e^2 - 2*c*d^2*e*f + c^2*
d*f^2 + (d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2)*cos(f*x + e) - (d^3*e^2 - 2*c*d
^2*e*f + c^2*d*f^2)*sin(f*x + e))*log(-cos(f*x + e) - I*sin(f*x + e) + I) +
 6*(d^3*cos(f*x + e) - d^3*sin(f*x + e) + d^3)*polylog(3, I*cos(f*x + e) +
sin(f*x + e)) + 6*(d^3*cos(f*x + e) - d^3*sin(f*x + e) + d^3)*polylog(3, -I
*cos(f*x + e) + sin(f*x + e)) + (d^3*f^3*x^3 + 3*c*d^2*f^3*x^2 + 3*c^2*d*f^
3*x + c^3*f^3)*sin(f*x + e))/(a*f^4*cos(f*x + e) - a*f^4*sin(f*x + e) + a*f
^4)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(-(d*x + c)^3/(a*sin(f*x + e) - a), x)
```

maple [B] time = 0.20, size = 484, normalized size = 3.29

$$\frac{2d^3x^3+6c\,d^2x^2+6c^2dx+2c^3}{fa\left(e^{i\left(fx+e\right)}-i\right)}+\frac{12c\,d^2e\ln\left(e^{i\left(fx+e\right)}\right)}{a\,f^3}-\frac{6\ln\left(e^{i\left(fx+e\right)}\right)c^2d}{a\,f^2}-\frac{2id^3x^3}{af}+\frac{4id^3e^3}{a\,f^4}-\frac{6ic\,d^2x^2}{af}-\frac{12ic\,d^2ex}{a\,f^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2*(d^3*x^3+3*c*d^2*x^2+3*c^2*d*x+c^3)/f/a/(exp(I*(f*x+e))-I)+12/a/f^3*c*d^2
*e*ln(exp(I*(f*x+e)))-6/a/f^2*ln(exp(I*(f*x+e)))*c^2*d-2*I/a/f*d^3*x^3-12*I
/a/f^3*d^3*polylog(2,-I*exp(I*(f*x+e)))*x+4*I/a/f^4*d^3*e^3-6*I/a/f*c*d^2*x
^2-12*I/a/f^2*c*d^2*e*x-12/a/f^3*c*d^2*e*ln(exp(I*(f*x+e))-I)-6/a/f^4*d^3*e
^2*ln(exp(I*(f*x+e)))+6/a/f^2*ln(exp(I*(f*x+e))-I)*c^2*d+6/a/f^4*d^3*e^2*ln
(exp(I*(f*x+e))-I)+12*d^3*polylog(3,-I*exp(I*(f*x+e)))/a/f^4+6/a/f^2*d^3*ln
(1+I*exp(I*(f*x+e)))*x^2-6/a/f^4*d^3*ln(1+I*exp(I*(f*x+e)))*e^2+6*I/a/f^3*d
^3*e^2*x-12*I/a/f^3*c*d^2*polylog(2,-I*exp(I*(f*x+e)))-6*I/a/f^3*c*d^2*e^2+
12/a/f^2*c*d^2*ln(1+I*exp(I*(f*x+e)))*x+12/a/f^3*c*d^2*ln(1+I*exp(I*(f*x+e)
))*e
```

<u>**maxima**</u> **[B]** time = 0.69, size = 982, normalized size = 6.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(6*(2*(f*x + e)*cos(f*x + e) + (cos(f*x + e)^2 + sin(f*x + e)^2 - 2*sin(f*
x + e) + 1)*log(cos(f*x + e)^2 + sin(f*x + e)^2 - 2*sin(f*x + e) + 1))*c*d^
2*e/(a*f^2*cos(f*x + e)^2 + a*f^2*sin(f*x + e)^2 - 2*a*f^2*sin(f*x + e) + a
*f^2) - 6*c*d^2*e^2/(a*f^2 - a*f^2*sin(f*x + e)/(cos(f*x + e) + 1)) - 3*(2*
(f*x + e)*cos(f*x + e) + (cos(f*x + e)^2 + sin(f*x + e)^2 - 2*sin(f*x + e)
+ 1)*log(cos(f*x + e)^2 + sin(f*x + e)^2 - 2*sin(f*x + e) + 1))*c^2*d/(a*f*
cos(f*x + e)^2 + a*f*sin(f*x + e)^2 - 2*a*f*sin(f*x + e) + a*f) + 6*c^2*d*e
/(a*f - a*f*sin(f*x + e)/(cos(f*x + e) + 1)) - 2*c^3/(a - a*sin(f*x + e)/(c
os(f*x + e) + 1)) - (2*I*d^3*e^3 + (6*d^3*e^2*cos(f*x + e) + 6*I*d^3*e^2*si
n(f*x + e) - 6*I*d^3*e^2)*arctan2(sin(f*x + e) - 1, cos(f*x + e)) + (-6*I*(
f*x + e)^2*d^3 + (12*I*d^3*e - 12*I*c*d^2*f)*(f*x + e) + 6*((f*x + e)^2*d^3
 - 2*(d^3*e - c*d^2*f)*(f*x + e))*cos(f*x + e) + (6*I*(f*x + e)^2*d^3 + (-1
2*I*d^3*e + 12*I*c*d^2*f)*(f*x + e))*sin(f*x + e))*arctan2(cos(f*x + e), -s
in(f*x + e) + 1) - 2*((f*x + e)^3*d^3 + 3*(f*x + e)*d^3*e^2 - 3*(d^3*e - c*
d^2*f)*(f*x + e)^2)*cos(f*x + e) + (12*I*(f*x + e)*d^3 - 12*I*d^3*e + 12*I*
c*d^2*f - 12*((f*x + e)*d^3 - d^3*e + c*d^2*f)*cos(f*x + e) + (-12*I*(f*x +
 e)*d^3 + 12*I*d^3*e - 12*I*c*d^2*f)*sin(f*x + e))*dilog(-I*e^(I*f*x + I*e)
) - (3*(f*x + e)^2*d^3 + 3*d^3*e^2 - 6*(d^3*e - c*d^2*f)*(f*x + e) - (-3*I*
(f*x + e)^2*d^3 - 3*I*d^3*e^2 + (6*I*d^3*e - 6*I*c*d^2*f)*(f*x + e))*cos(f*
x + e) - 3*((f*x + e)^2*d^3 + d^3*e^2 - 2*(d^3*e - c*d^2*f)*(f*x + e))*sin(
f*x + e))*log(cos(f*x + e)^2 + sin(f*x + e)^2 - 2*sin(f*x + e) + 1) + (-12*
I*d^3*cos(f*x + e) + 12*d^3*sin(f*x + e) - 12*d^3)*polylog(3, -I*e^(I*f*x +
 I*e)) + (-2*I*(f*x + e)^3*d^3 - 6*I*(f*x + e)*d^3*e^2 + (6*I*d^3*e - 6*I*c
*d^2*f)*(f*x + e)^2)*sin(f*x + e))/(-I*a*f^3*cos(f*x + e) + a*f^3*sin(f*x +
 e) - a*f^3))/f
```

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

$$\int \frac{(c+d\,x)^3}{a-a\,\sin\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((c + d*x)^3/(a - a*sin(e + f*x)), x)
```

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

$$-\frac{\int \frac{c^3}{\sin\left(e+fx\right)-1}\,dx+\int \frac{d^3x^3}{\sin\left(e+fx\right)-1}\,dx+\int \frac{3cd^2x^2}{\sin\left(e+fx\right)-1}\,dx+\int \frac{3c^2dx}{\sin\left(e+fx\right)-1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.118 $\int \frac{(c+dx)^2}{a-a\sin(e+fx)}\,dx$

Optimal. Leaf size=112

$$\frac{4d(c+dx)\log\left(1+ie^{i(e+fx)}\right)}{af^2}+\frac{(c+dx)^2\tan\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af}-\frac{i(c+dx)^2}{af}-\frac{4id^2\text{Li}_2\left(-ie^{i(e+fx)}\right)}{af^3}$$

```
[Out] -I*(d*x+c)^2/a/f+4*d*(d*x+c)*ln(1+I*exp(I*(f*x+e)))/a/f^2-4*I*d^2*polylog(2
,-I*exp(I*(f*x+e)))/a/f^3+(d*x+c)^2*tan(1/2*e+1/4*Pi+1/2*f*x)/a/f
```

Rubi [A] time = 0.21, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {3318, 4184, 3717, 2190, 2279, 2391}

$$-\frac{4id^2\text{PolyLog}\left(2,-ie^{i(e+fx)}\right)}{af^3}+\frac{4d(c+dx)\log\left(1+ie^{i(e+fx)}\right)}{af^2}+\frac{(c+dx)^2\tan\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af}-\frac{i(c+dx)^2}{af}$$

Antiderivative was successfully verified.

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

```
[Out] ((-I)*(c + d*x)^2)/(a*f) + (4*d*(c + d*x)*Log[1 + I*E^(I*(e + f*x))])/(a*f^
2) - ((4*I)*d^2*PolyLog[2, (-I)*E^(I*(e + f*x))])/(a*f^3) + ((c + d*x)^2*Ta
n[e/2 + Pi/4 + (f*x)/2])/(a*f)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3318

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

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

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

$$= \frac{(c+dx)^2\tan\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{(2d)\int (c+dx)\cot\left(\frac{e}{2}-\frac{\pi}{4}+\frac{fx}{2}\right)dx}{af}$$

$$= -\frac{i(c+dx)^2}{af}+\frac{(c+dx)^2\tan\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}-\frac{(4d)\int \frac{e^{2i\left(\frac{e}{2}+\frac{fx}{2}\right)}(c+dx)}{1+ie^{2i\left(\frac{e}{2}+\frac{fx}{2}\right)}}dx}{af}$$

$$= -\frac{i(c+dx)^2}{af}+\frac{4d(c+dx)\log\left(1+ie^{i(e+fx)}\right)}{af^2}+\frac{(c+dx)^2\tan\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}-\frac{\left(4d^2\right)\int \mathrm{lo}}{}$$

$$= -\frac{i(c+dx)^2}{af}+\frac{4d(c+dx)\log\left(1+ie^{i(e+fx)}\right)}{af^2}+\frac{(c+dx)^2\tan\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{\left(4id^2\right)\mathrm{Su}}{}$$

$$= -\frac{i(c+dx)^2}{af}+\frac{4d(c+dx)\log\left(1+ie^{i(e+fx)}\right)}{af^2}-\frac{4id^2\mathrm{Li}_2\left(-ie^{i(e+fx)}\right)}{af^3}+\frac{(c+dx)^2\tan\left(\frac{e}{2}+\right.}{af}$$

Mathematica [A] time = 0.80, size = 92, normalized size = 0.82

$$\frac{f(c+dx)\left(f(c+dx)\tan\left(\frac{1}{4}(2e+2fx+\pi)\right)-if(c+dx)+4d\log\left(1+ie^{i(e+fx)}\right)\right)-4id^2\text{Li}_2\left(-ie^{i(e+fx)}\right)}{af^3}$$

Antiderivative was successfully verified.

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

```
[Out] ((-4*I)*d^2*PolyLog[2, (-I)*E^(I*(e + f*x))] + f*(c + d*x)*((-I)*f*(c + d*x
) + 4*d*Log[1 + I*E^(I*(e + f*x))] + f*(c + d*x)*Tan[(2*e + Pi + 2*f*x)/4])
)/(a*f^3)
```

fricas [B] time = 0.55, size = 496, normalized size = 4.43

$$\frac{d^2f^2x^2+2\,cdf^2x+c^2f^2+\left(d^2f^2x^2+2\,cdf^2x+c^2f^2\right)\cos\left(fx+e\right)-\left(-2i\,d^2\cos\left(fx+e\right)+2i\,d^2\sin\left(fx+e\right)-2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (d^2*f^2*x^2 + 2*c*d*f^2*x + c^2*f^2 + (d^2*f^2*x^2 + 2*c*d*f^2*x + c^2*f^2
)*cos(f*x + e) - (-2*I*d^2*cos(f*x + e) + 2*I*d^2*sin(f*x + e) - 2*I*d^2)*d
ilog(I*cos(f*x + e) + sin(f*x + e)) - (2*I*d^2*cos(f*x + e) - 2*I*d^2*sin(f
*x + e) + 2*I*d^2)*dilog(-I*cos(f*x + e) + sin(f*x + e)) - 2*(d^2*e - c*d*f
 + (d^2*e - c*d*f)*cos(f*x + e) - (d^2*e - c*d*f)*sin(f*x + e))*log(cos(f*x
 + e) - I*sin(f*x + e) + I) + 2*(d^2*f*x + d^2*e + (d^2*f*x + d^2*e)*cos(f*
x + e) - (d^2*f*x + d^2*e)*sin(f*x + e))*log(I*cos(f*x + e) - sin(f*x + e)
+ 1) + 2*(d^2*f*x + d^2*e + (d^2*f*x + d^2*e)*cos(f*x + e) - (d^2*f*x + d^2
*e)*sin(f*x + e))*log(-I*cos(f*x + e) - sin(f*x + e) + 1) - 2*(d^2*e - c*d*
f + (d^2*e - c*d*f)*cos(f*x + e) - (d^2*e - c*d*f)*sin(f*x + e))*log(-cos(f
*x + e) - I*sin(f*x + e) + I) + (d^2*f^2*x^2 + 2*c*d*f^2*x + c^2*f^2)*sin(f
*x + e))/(a*f^3*cos(f*x + e) - a*f^3*sin(f*x + e) + a*f^3)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(-(d*x + c)^2/(a*sin(f*x + e) - a), x)
```

maple [B] time = 0.14, size = 254, normalized size = 2.27

$$\frac{2d^2x^2+4cdx+2c^2}{fa\left(\mathrm{e}^{i(fx+e)}-i\right)}+\frac{4\ln\left(\mathrm{e}^{i(fx+e)}-i\right)cd}{a\,f^2}-\frac{4\ln\left(\mathrm{e}^{i(fx+e)}\right)cd}{a\,f^2}-\frac{2id^2x^2}{af}-\frac{4id^2ex}{a\,f^2}-\frac{2id^2e^2}{a\,f^3}+\frac{4d^2\ln\left(1+i\mathrm{e}^{i(fx+e)}\right)x}{a\,f^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 2*(d^2*x^2+2*c*d*x+c^2)/f/a/(exp(I*(f*x+e))-I)+4/a/f^2*ln(exp(I*(f*x+e))-I)
*c*d-4/a/f^2*ln(exp(I*(f*x+e)))*c*d-2*I/a/f*d^2*x^2-4*I/a/f^2*d^2*e*x-2*I/a
/f^3*d^2*e^2+4/a/f^2*d^2*ln(1+I*exp(I*(f*x+e)))*x+4/a/f^3*d^2*ln(1+I*exp(I*
(f*x+e)))*e-4*I*d^2*polylog(2,-I*exp(I*(f*x+e)))/a/f^3-4/a/f^3*d^2*e*ln(exp
(I*(f*x+e))-I)+4/a/f^3*d^2*e*ln(exp(I*(f*x+e)))
```

maxima [B] time = 0.51, size = 316, normalized size = 2.82

$$\frac{-2i\,c^2f^2+\left(4\,cdf\cos\left(fx+e\right)+4i\,cdf\sin\left(fx+e\right)-4i\,cdf\right)\arctan\left(\sin\left(fx+e\right)-1,\cos\left(fx+e\right)\right)+\left(4\,d^2fx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (-2*I*c^2*f^2 + (4*c*d*f*cos(f*x + e) + 4*I*c*d*f*sin(f*x + e) - 4*I*c*d*f)
*arctan2(sin(f*x + e) - 1, cos(f*x + e)) + (4*d^2*f*x*cos(f*x + e) + 4*I*d^
2*f*x*sin(f*x + e) - 4*I*d^2*f*x)*arctan2(cos(f*x + e), -sin(f*x + e) + 1)
- 2*(d^2*f^2*x^2 + 2*c*d*f^2*x)*cos(f*x + e) - (4*d^2*cos(f*x + e) + 4*I*d^
2*sin(f*x + e) - 4*I*d^2)*dilog(-I*e^(I*f*x + I*e)) - (2*d^2*f*x + 2*c*d*f
- (-2*I*d^2*f*x - 2*I*c*d*f)*cos(f*x + e) - 2*(d^2*f*x + c*d*f)*sin(f*x + e
))*log(cos(f*x + e)^2 + sin(f*x + e)^2 - 2*sin(f*x + e) + 1) + (-2*I*d^2*f^
2*x^2 - 4*I*c*d*f^2*x)*sin(f*x + e))/(-I*a*f^3*cos(f*x + e) + a*f^3*sin(f*x
 + e) - a*f^3)
```

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

$$\int \frac{(c+d\,x)^2}{a-a\,\sin\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((c + d*x)^2/(a - a*sin(e + f*x)), x)
```

<u>**sympy**</u> **[F]** time = 0.00, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.119 $\int \frac{c+dx}{a-a\sin(e+fx)}\,dx$

Optimal. Leaf size=59

$$\frac{(c+dx)\tan\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af}+\frac{2d\log\left(\cos\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\right)}{af^2}$$

```
[Out] 2*d*ln(cos(1/2*e+1/4*Pi+1/2*f*x))/a/f^2+(d*x+c)*tan(1/2*e+1/4*Pi+1/2*f*x)/a
/f
```

Rubi [A] time = 0.07, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {3318, 4184, 3475}

$$\frac{(c+dx)\tan\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af}+\frac{2d\log\left(\cos\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\right)}{af^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)/(a - a*Sin[e + f*x]),x]
```

```
[Out] (2*d*Log[Cos[e/2 + Pi/4 + (f*x)/2]])/(a*f^2) + ((c + d*x)*Tan[e/2 + Pi/4 +
(f*x)/2])/(a*f)
```

Rule 3318

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

Rule 3475

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

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{c+dx}{a-a\sin(e+fx)}\,dx=\frac{\int (c+dx)\csc^2\left(\frac{1}{2}\left(e-\frac{\pi}{2}\right)+\frac{fx}{2}\right)dx}{2a}$$
$$=\frac{(c+dx)\tan\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}+\frac{d\int\cot\left(\frac{e}{2}-\frac{\pi}{4}+\frac{fx}{2}\right)dx}{af}$$
$$=\frac{2d\log\left(\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\right)}{af^2}+\frac{(c+dx)\tan\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{af}$$

Mathematica [A] time = 0.17, size = 47, normalized size = 0.80

$$\frac{f(c+dx)\tan\left(\frac{1}{4}(2e+2fx+\pi)\right)+2d\log\left(\cos\left(\frac{1}{4}(2e+2fx+\pi)\right)\right)}{af^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)/(a - a*Sin[e + f*x]),x]
```

```
[Out] (2*d*Log[Cos[(2*e + Pi + 2*f*x)/4]] + f*(c + d*x)*Tan[(2*e + Pi + 2*f*x)/4]
)/(a*f^2)
```

fricas [B] time = 0.73, size = 101, normalized size = 1.71

$$\frac{dfx+cf+(dfx+cf)\cos(fx+e)+(d\cos(fx+e)-d\sin(fx+e)+d)\log(-\sin(fx+e)+1)+(dfx+cf)}{af^2\cos(fx+e)-af^2\sin(fx+e)+af^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

giac [B] time = 0.66, size = 697, normalized size = 11.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [B] time = 0.12, size = 123, normalized size = 2.08

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(a-a*sin(f*x+e)),x)
```

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

maxima [B] time = 1.18, size = 169, normalized size = 2.86

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.89, size = 66, normalized size = 1.12

$$\frac{2\,d\,\ln\left(\mathrm{e}^{e\,1\mathrm{i}}\,\mathrm{e}^{f\,x\,1\mathrm{i}}-\mathrm{i}\right)}{a\,f^2}+\frac{2\,\left(c+d\,x\right)}{a\,f\,\left(\mathrm{e}^{e\,1\mathrm{i}+f\,x\,1\mathrm{i}}-\mathrm{i}\right)}-\frac{d\,x\,2\mathrm{i}}{a\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/(a - a*sin(e + f*x)),x)
```

```
[Out] (2*d*log(exp(e*1i)*exp(f*x*1i) - 1i))/(a*f^2) + (2*(c + d*x))/(a*f*(exp(e*1
i + f*x*1i) - 1i)) - (d*x*2i)/(a*f)
```

sympy [A] time = 1.12, size = 272, normalized size = 4.61

$$\begin{cases} -\frac{2cf}{af^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-af^2}-\frac{dfx\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{af^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-af^2}-\frac{dfx}{af^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-af^2}+\frac{2d\log\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)\tan\left(\frac{e}{2}+\frac{fx}{2}\right)}{af^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-af^2}-\frac{2d\log\left(\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-1\right)}{af^2\tan\left(\frac{e}{2}+\frac{fx}{2}\right)-af^2}- \\ \frac{cx+\frac{dx^2}{2}}{-a\sin(e)+a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.120 $\int \frac{1}{(c+dx)(a-a\sin(e+fx))}\,dx$

Optimal. Leaf size=24

$$\text{Int}\left(\frac{1}{(c+dx)(a-a\sin(e+fx))},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)/(a-a*sin(f*x+e)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)(a-a\sin(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)*(a - a*Sin[e + f*x])),x]
```

```
[Out] Defer[Int][1/((c + d*x)*(a - a*Sin[e + f*x])), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)(a-a\sin(e+fx))}\,dx = \int \frac{1}{(c+dx)(a-a\sin(e+fx))}\,dx$$

Mathematica [A] time = 5.38, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)(a-a\sin(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)*(a - a*Sin[e + f*x])),x]
```

```
[Out] Integrate[1/((c + d*x)*(a - a*Sin[e + f*x])), x]
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{adx+ac-(adx+ac)\sin\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a-a*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*d*x + a*c - (a*d*x + a*c)*sin(f*x + e)), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a-a*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate(-1/((d*x + c)*(a*sin(f*x + e) - a)), x)
```

maple [A] time = 0.22, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)/(a-a*sin(f*x+e)),x)
```

```
[Out] int(1/(d*x+c)/(a-a*sin(f*x+e)),x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a-a*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a-a\,\sin\left(e+f\,x\right)\right)\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a - a*sin(e + f*x))*(c + d*x)),x)
```

```
[Out] int(1/((a - a*sin(e + f*x))*(c + d*x)), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a-a*sin(f*x+e)),x)
[Out] -Integral(1/(c*sin(e + f*x) - c + d*x*sin(e + f*x) - d*x), x)/a
```

3.121 $\int \frac{1}{(c+dx)^2(a-a\sin(e+fx))}\,dx$

Optimal. Leaf size=24

$$\mathrm{Int}\left(\frac{1}{(c+dx)^2(a-a\sin(e+fx))},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)^2/(a-a*sin(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

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

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)^2*(a - a*Sin[e + f*x])),x]
[Out] Defer[Int][1/((c + d*x)^2*(a - a*Sin[e + f*x])), x]
```

Rubi steps

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

Mathematica [A] time = 5.08, size = 0, normalized size = 0.00

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

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)^2*(a - a*Sin[e + f*x])),x]
[Out] Integrate[1/((c + d*x)^2*(a - a*Sin[e + f*x])), x]
```

fricas [A] time = 0.75, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{1}{ad^2x^2+2\,acdx+ac^2-\left(ad^2x^2+2\,acdx+ac^2\right)\sin\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a-a*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*d^2*x^2 + 2*a*c*d*x + a*c^2 - (a*d^2*x^2 + 2*a*c*d*x + a*c^2)
*sin(f*x + e)), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a-a*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate(-1/((d*x + c)^2*(a*sin(f*x + e) - a)), x)
```

maple [A] time = 0.43, size = 0, normalized size = 0.00

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^2/(a-a*sin(f*x+e)),x)
```

```
[Out] int(1/(d*x+c)^2/(a-a*sin(f*x+e)),x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a-a*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a-a\,\sin\left(e+f\,x\right)\right)\,{\left(c+d\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a - a*sin(e + f*x))*(c + d*x)^2),x)
```

```
[Out] int(1/((a - a*sin(e + f*x))*(c + d*x)^2), x)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)**2/(a-a*sin(f*x+e)),x)
```

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

3.122 $\int x^3\sqrt{a + a\sin(c + dx)}\, dx$

Optimal. Leaf size=120

$$-\frac{96\sqrt{a\sin(c+dx)+a}}{d^4}+\frac{48x\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}}{d^3}+\frac{12x^2\sqrt{a\sin(c+dx)+a}}{d^2}-\frac{2x^3\cot\left(\frac{c}{2}+\frac{dx}{2}+\right.}{}$$

```
[Out] -96*(a+a*sin(d*x+c))^(1/2)/d^4+12*x^2*(a+a*sin(d*x+c))^(1/2)/d^2+48*x*cot(1
/2*c+1/4*Pi+1/2*d*x)*(a+a*sin(d*x+c))^(1/2)/d^3-2*x^3*cot(1/2*c+1/4*Pi+1/2*
d*x)*(a+a*sin(d*x+c))^(1/2)/d
```

Rubi [A] time = 0.14, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3319, 3296, 2638}

$$\frac{12x^2\sqrt{a\sin(c+dx)+a}}{d^2}-\frac{96\sqrt{a\sin(c+dx)+a}}{d^4}+\frac{48x\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}}{d^3}-\frac{2x^3\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] (-96*Sqrt[a + a*Sin[c + d*x]])/d^4 + (12*x^2*Sqrt[a + a*Sin[c + d*x]])/d^2
+ (48*x*Cot[c/2 + Pi/4 + (d*x)/2]*Sqrt[a + a*Sin[c + d*x]])/d^3 - (2*x^3*Co
t[c/2 + Pi/4 + (d*x)/2]*Sqrt[a + a*Sin[c + d*x]])/d
```

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^3\sqrt{a+a\sin(c+dx)}\,dx = \left(\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}\right)\int x^3\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)dx$$
$$= -\frac{2x^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{d} + \frac{\left(6\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx}\right.}{d}$$
$$= \frac{12x^2\sqrt{a+a\sin(c+dx)}}{d^2} - \frac{2x^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{d} - \frac{\left(24\csc\left(\frac{c}{2}+\right.\right.}{}$$
$$= \frac{12x^2\sqrt{a+a\sin(c+dx)}}{d^2} + \frac{48x\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{d^3} - \frac{2x^3\cot\left(\frac{c}{2}+\right.}{}$$
$$= -\frac{96\sqrt{a+a\sin(c+dx)}}{d^4} + \frac{12x^2\sqrt{a+a\sin(c+dx)}}{d^2} + \frac{48x\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\,s}}{d^3}$$

Mathematica [A] time = 0.34, size = 108, normalized size = 0.90

$$-\frac{2\sqrt{a(\sin(c+dx)+1)}\left(\left(-d^3x^3-6d^2x^2+24dx+48\right)\sin\left(\frac{1}{2}(c+dx)\right)+\left(d^3x^3-6d^2x^2-24dx+48\right)\cos\left(\frac{1}{2}(c+d\right.\right.}{d^4\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] (-2*((48 - 24*d*x - 6*d^2*x^2 + d^3*x^3)*Cos[(c + d*x)/2] + (48 + 24*d*x -
6*d^2*x^2 - d^3*x^3)*Sin[(c + d*x)/2])*Sqrt[a*(1 + Sin[c + d*x])])/(d^4*(Co
s[(c + d*x)/2] + Sin[(c + d*x)/2]))
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+a*sin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [A] time = 1.09, size = 116, normalized size = 0.97

$$2\sqrt{2}\sqrt{a}\left(\frac{6\left(d^2x^2\mathrm{sgn}\left(\cos\left(-\frac{1}{4}\pi+\frac{1}{2}dx+\frac{1}{2}c\right)\right)-8\,\mathrm{sgn}\left(\cos\left(-\frac{1}{4}\pi+\frac{1}{2}dx+\frac{1}{2}c\right)\right)\right)\cos\left(-\frac{1}{4}\pi+\frac{1}{2}dx+\frac{1}{2}c\right)}{d^4}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+a*sin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(2)*sqrt(a)*(6*(d^2*x^2*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)) - 8*sgn(c
os(-1/4*pi + 1/2*d*x + 1/2*c)))*cos(-1/4*pi + 1/2*d*x + 1/2*c)/d^4 + (d^3*x
^3*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)) - 24*d*x*sgn(cos(-1/4*pi + 1/2*d*x +
 1/2*c)))*sin(-1/4*pi + 1/2*d*x + 1/2*c)/d^4)
```

maple [C] time = 0.14, size = 145, normalized size = 1.21

$$-\frac{i\sqrt{2}\,\sqrt{-a\left(-2-2\sin\left(dx+c\right)\right)}\,\left(-ix^3d^3+d^3x^3\mathrm{e}^{i(dx+c)}+6id^2x^2\mathrm{e}^{i(dx+c)}-6d^2x^2+24idx-24dx\,\mathrm{e}^{i(dx+c)}-48i\mathrm{e}^{i(d}\right.}{\left(\mathrm{e}^{2i(dx+c)}-1+2i\mathrm{e}^{i(dx+c)}\right)d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a+a*sin(d*x+c))^(1/2),x)
```

```
[Out] -I*2^(1/2)*(-a*(-2-2*sin(d*x+c)))^(1/2)/(exp(2*I*(d*x+c))-1+2*I*exp(I*(d*x+
c)))*(-I*x^3*d^3+d^3*x^3*exp(I*(d*x+c))+6*I*d^2*x^2*exp(I*(d*x+c))-6*d^2*x^
2+24*I*d*x-24*d*x*exp(I*(d*x+c))-48*I*exp(I*(d*x+c))+48)*(exp(I*(d*x+c))+I)
/d^4
```

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

$$\int\sqrt{a\sin\left(dx+c\right)+a}\,x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(a+a*sin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sin(d*x + c) + a)*x^3, x)
```

mupad [B] time = 0.96, size = 82, normalized size = 0.68

$$-\frac{2\sqrt{a\,\left(\sin\left(c+d\,x\right)+1\right)}\,\left(48\,\sin\left(c+d\,x\right)-6\,d^2\,x^2+d^3\,x^3\,\cos\left(c+d\,x\right)-6\,d^2\,x^2\,\sin\left(c+d\,x\right)-24\,d\,x\,\cos\left(c+\right.\right.}{d^4\,\left(\sin\left(c+d\,x\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + a*sin(c + d*x))^(1/2),x)
```

```
[Out] -(2*(a*(sin(c + d*x) + 1))^(1/2)*(48*sin(c + d*x) - 6*d^2*x^2 + d^3*x^3*cos
(c + d*x) - 6*d^2*x^2*sin(c + d*x) - 24*d*x*cos(c + d*x) + 48))/(d^4*(sin(c
 + d*x) + 1))
```

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

$$\int x^3\sqrt{a\left(\sin\left(c+dx\right)+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(a+a*sin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x**3*sqrt(a*(sin(c + d*x) + 1)), x)
```

3.123 $\int x^2\sqrt{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=98

$$\frac{16\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}}{d^3}+\frac{8x\sqrt{a\sin(c+dx)+a}}{d^2}-\frac{2x^2\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}}{d}$$

```
[Out] 8*x*(a+a*sin(d*x+c))^(1/2)/d^2+16*cot(1/2*c+1/4*Pi+1/2*d*x)*(a+a*sin(d*x+c)
)^(1/2)/d^3-2*x^2*cot(1/2*c+1/4*Pi+1/2*d*x)*(a+a*sin(d*x+c))^(1/2)/d
```

Rubi [A] time = 0.10, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3319, 3296, 2638}

$$\frac{8x\sqrt{a\sin(c+dx)+a}}{d^2}+\frac{16\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}}{d^3}-\frac{2x^2\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] (8*x*Sqrt[a + a*Sin[c + d*x]])/d^2 + (16*Cot[c/2 + Pi/4 + (d*x)/2]*Sqrt[a +
 a*Sin[c + d*x]])/d^3 - (2*x^2*Cot[c/2 + Pi/4 + (d*x)/2]*Sqrt[a + a*Sin[c +
 d*x]])/d
```

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^2\sqrt{a+a\sin(c+dx)}\,dx = \left(\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}\right)\int x^2\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)dx$$

$$= -\frac{2x^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{d}+\frac{\left(4\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx}\right.}{d}$$

$$= \frac{8x\sqrt{a+a\sin(c+dx)}}{d^2}-\frac{2x^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{d}-\frac{\left(8\csc\left(\frac{c}{2}+\frac{\pi}{4}\right.\right.}{}$$

$$= \frac{8x\sqrt{a+a\sin(c+dx)}}{d^2}+\frac{16\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{d^3}-\frac{2x^2\cot\left(\frac{c}{2}+\frac{\pi}{4}\right.}{}$$

Mathematica [A] time = 0.23, size = 92, normalized size = 0.94

$$-\frac{2\sqrt{a(\sin(c+dx)+1)}\left(\left(d^2x^2-4dx-8\right)\cos\left(\frac{1}{2}(c+dx)\right)-\left(d^2x^2+4dx-8\right)\sin\left(\frac{1}{2}(c+dx)\right)\right)}{d^3\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] (-2*((-8 - 4*d*x + d^2*x^2)*Cos[(c + d*x)/2] - (-8 + 4*d*x + d^2*x^2)*Sin[(
c + d*x)/2])*Sqrt[a*(1 + Sin[c + d*x]])/(d^3*(Cos[(c + d*x)/2] + Sin[(c +
d*x)/2]))
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+a*sin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [A] time = 0.60, size = 92, normalized size = 0.94

$$2\sqrt{2}\sqrt{a}\left(\frac{4x\cos\left(-\frac{1}{4}\pi+\frac{1}{2}dx+\frac{1}{2}c\right)\mathrm{sgn}\left(\cos\left(-\frac{1}{4}\pi+\frac{1}{2}dx+\frac{1}{2}c\right)\right)}{d^2}+\frac{\left(d^2x^2\mathrm{sgn}\left(\cos\left(-\frac{1}{4}\pi+\frac{1}{2}dx+\frac{1}{2}c\right)\right)-8\,\mathrm{sg}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+a*sin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(2)*sqrt(a)*(4*x*cos(-1/4*pi + 1/2*d*x + 1/2*c)*sgn(cos(-1/4*pi + 1/2
*d*x + 1/2*c))/d^2 + (d^2*x^2*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)) - 8*sgn(c
os(-1/4*pi + 1/2*d*x + 1/2*c)))*sin(-1/4*pi + 1/2*d*x + 1/2*c)/d^3)
```

maple [C] time = 0.07, size = 119, normalized size = 1.21

$$-\frac{i\sqrt{2}\,\sqrt{-a\left(-2-2\sin\left(dx+c\right)\right)}\,\left(-id^{2}x^{2}+d^{2}x^{2}\mathrm{e}^{i(dx+c)}+4idx\,\mathrm{e}^{i(dx+c)}-4dx+8i-8\,\mathrm{e}^{i(dx+c)}\right)\left(\mathrm{e}^{i(dx+c)}+i\right)}{\left(\mathrm{e}^{2i(dx+c)}-1+2i\mathrm{e}^{i(dx+c)}\right)d^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+a*sin(d*x+c))^(1/2),x)
```

```
[Out] -I*2^(1/2)*(-a*(-2-2*sin(d*x+c)))^(1/2)/(exp(2*I*(d*x+c))-1+2*I*exp(I*(d*x+
c)))*(-I*d^2*x^2+d^2*x^2*exp(I*(d*x+c))+4*I*d*x*exp(I*(d*x+c))-4*d*x+8*I-8*
exp(I*(d*x+c)))*(exp(I*(d*x+c))+I)/d^3
```

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

$$\int\sqrt{a\sin\left(dx+c\right)+a}\,x^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(a+a*sin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sin(d*x + c) + a)*x^2, x)
```

mupad [B] time = 0.84, size = 64, normalized size = 0.65

$$\frac{2\,\sqrt{a\,\left(\sin\left(c+d\,x\right)+1\right)}\,\left(8\,\cos\left(c+d\,x\right)+4\,d\,x-d^2\,x^2\,\cos\left(c+d\,x\right)+4\,d\,x\,\sin\left(c+d\,x\right)\right)}{d^3\,\left(\sin\left(c+d\,x\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + a*sin(c + d*x))^(1/2),x)
```

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

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

$$\int x^{2}\sqrt{a\left(\sin\left(c+dx\right)+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+a*sin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x**2*sqrt(a*(sin(c + d*x) + 1)), x)
```

3.124 $\int x\sqrt{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=58

$$\frac{4\sqrt{a\sin(c+dx)+a}}{d^2}-\frac{2x\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}}{d}$$

```
[Out] 4*(a+a*sin(d*x+c))^(1/2)/d^2-2*x*cot(1/2*c+1/4*Pi+1/2*d*x)*(a+a*sin(d*x+c))
^(1/2)/d
```

Rubi [A] time = 0.07, antiderivative size = 58, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {3319, 3296, 2638}

$$\frac{4\sqrt{a\sin(c+dx)+a}}{d^2}-\frac{2x\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}}{d}$$

Antiderivative was successfully verified.

```
[In] Int[x*Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] (4*Sqrt[a + a*Sin[c + d*x]])/d^2 - (2*x*Cot[c/2 + Pi/4 + (d*x)/2]*Sqrt[a +
a*Sin[c + d*x]])/d
```

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x\sqrt{a+a\sin(c+dx)}\,dx = \left(\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}\right)\int x\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)dx$$
$$= -\frac{2x\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{d} + \frac{\left(2\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}\right.}{d}$$
$$= \frac{4\sqrt{a+a\sin(c+dx)}}{d^2} - \frac{2x\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{d}$$

Mathematica [A] time = 0.20, size = 76, normalized size = 1.31

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

Antiderivative was successfully verified.

```
[In] Integrate[x*Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] (-2*((-2 + d*x)*Cos[(c + d*x)/2] - (2 + d*x)*Sin[(c + d*x)/2])*Sqrt[a*(1 +
Sin[c + d*x]])])/(d^2*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]))
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+a*sin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [A] time = 0.83, size = 69, normalized size = 1.19

$$2\sqrt{2}\left(\frac{x\mathrm{sgn}\left(\cos\left(-\frac{1}{4}\pi+\frac{1}{2}dx+\frac{1}{2}c\right)\right)\sin\left(-\frac{1}{4}\pi+\frac{1}{2}dx+\frac{1}{2}c\right)}{d}+\frac{2\cos\left(-\frac{1}{4}\pi+\frac{1}{2}dx+\frac{1}{2}c\right)\mathrm{sgn}\left(\cos\left(-\frac{1}{4}\pi+\frac{1}{2}d\right.\right.}{d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+a*sin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(2)*(x*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*sin(-1/4*pi + 1/2*d*x + 1/
2*c)/d + 2*cos(-1/4*pi + 1/2*d*x + 1/2*c)*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c
))/d^2)*sqrt(a)
```

maple [C] time = 0.06, size = 93, normalized size = 1.60

$$-\frac{i\sqrt{2}\,\sqrt{-a\left(-2-2\sin\left(dx+c\right)\right)}\,\left(-idx+dx\,\mathrm{e}^{i(dx+c)}+2i\mathrm{e}^{i(dx+c)}-2\right)\left(\mathrm{e}^{i(dx+c)}+i\right)}{\left(\mathrm{e}^{2i(dx+c)}-1+2i\mathrm{e}^{i(dx+c)}\right)d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a+a*sin(d*x+c))^(1/2),x)
```

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

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

$$\int\sqrt{a\sin\left(dx+c\right)+a}\,x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+a*sin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sin(d*x + c) + a)*x, x)
```

mupad [B] time = 0.23, size = 47, normalized size = 0.81

$$\frac{2\,\sqrt{a\,\left(\sin\left(c+d\,x\right)+1\right)}\,\left(2\,\sin\left(c+d\,x\right)-d\,x\,\cos\left(c+d\,x\right)+2\right)}{d^2\,\left(\sin\left(c+d\,x\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + a*sin(c + d*x))^(1/2),x)
```

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

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

$$\int x\sqrt{a\left(\sin\left(c+dx\right)+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+a*sin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x*sqrt(a*(sin(c + d*x) + 1)), x)
```

3.125 $\int \frac{\sqrt{a+a\sin(c+dx)}}{x}\,dx$

Optimal. Leaf size=101

$$\sin\left(\frac{1}{4}(2c+\pi)\right)\text{Ci}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}+\cos\left(\frac{1}{4}(2c+\pi)\right)\text{Si}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\,\text{si}}$$

```
[Out] cos(1/2*c+1/4*Pi)*csc(1/2*c+1/4*Pi+1/2*d*x)*Si(1/2*d*x)*(a+a*sin(d*x+c))^(1
/2)+Ci(1/2*d*x)*csc(1/2*c+1/4*Pi+1/2*d*x)*sin(1/2*c+1/4*Pi)*(a+a*sin(d*x+c)
)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3319, 3303, 3299, 3302}

$$\sin\left(\frac{1}{4}(2c+\pi)\right)\text{CosIntegral}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}+\cos\left(\frac{1}{4}(2c+\pi)\right)\text{Si}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{dx}{2}+\right.$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sin[c + d*x]]/x,x]
```

```
[Out] CosIntegral[(d*x)/2]*Csc[c/2 + Pi/4 + (d*x)/2]*Sin[(2*c + Pi)/4]*Sqrt[a + a
*Sin[c + d*x]] + Cos[(2*c + Pi)/4]*Csc[c/2 + Pi/4 + (d*x)/2]*Sqrt[a + a*Sin
[c + d*x]]*SinIntegral[(d*x)/2]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+a\sin(c+dx)}}{x}\,dx = \left(\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}\right)\int \frac{\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{x}\,dx$$

$$= \left(\cos\left(\frac{1}{4}(2c+\pi)\right)\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}\right)\int \frac{\sin\left(\frac{dx}{2}\right)}{x}\,dx + \left(\csc\left(\frac{c}{2}\right.\right.$$

$$= \operatorname{Ci}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sin\left(\frac{1}{4}(2c+\pi)\right)\sqrt{a+a\sin(c+dx)} + \cos\left(\frac{1}{4}(2c+\pi)\right)\mathrm{c}$$

Mathematica [A] time = 0.18, size = 83, normalized size = 0.82

$$\frac{\sqrt{a(\sin(c+dx)+1)}\left(\left(\sin\left(\frac{c}{2}\right)+\cos\left(\frac{c}{2}\right)\right)\operatorname{Ci}\left(\frac{dx}{2}\right)+\left(\cos\left(\frac{c}{2}\right)-\sin\left(\frac{c}{2}\right)\right)\operatorname{Si}\left(\frac{dx}{2}\right)\right)}{\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sin[c + d*x]]/x,x]
```

```
[Out] (Sqrt[a*(1 + Sin[c + d*x])]*(CosIntegral[(d*x)/2]*(Cos[c/2] + Sin[c/2]) + (
Cos[c/2] - Sin[c/2])*SinIntegral[(d*x)/2]))/(Cos[(c + d*x)/2] + Sin[(c + d*
x)/2])
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/2)/x,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [C] time = 2.25, size = 383, normalized size = 3.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/2)/x,x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*(imag_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x +
1/2*c))*tan(1/4*c)^2 - imag_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi +
1/2*d*x + 1/2*c))*tan(1/4*c)^2 + real_part(cos_integral(1/2*d*x))*sgn(cos(-
1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c)^2 + real_part(cos_integral(-1/2*d*x))
*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c)^2 + 2*sgn(cos(-1/4*pi + 1/2
*d*x + 1/2*c))*sin_integral(1/2*d*x)*tan(1/4*c)^2 + 2*imag_part(cos_integra
l(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c) - 2*imag_part(co
s_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c) - 2*re
al_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*
c) - 2*real_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)
)*tan(1/4*c) + 4*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*sin_integral(1/2*d*x)*
tan(1/4*c) - imag_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1
/2*c)) + imag_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*
c)) - real_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))
- real_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)) - 2
*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*sin_integral(1/2*d*x))*sqrt(a)/(sqrt(2
)*tan(1/4*c)^2 + sqrt(2))
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a + a \sin \left(dx + c\right)}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sin(d*x+c))^(1/2)/x,x)
```

```
[Out] int((a+a*sin(d*x+c))^(1/2)/x,x)
```

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

$$\int \frac{\sqrt{a \sin \left(dx + c\right) + a}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/2)/x,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sin(d*x + c) + a)/x, x)
```

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

$$\int \frac{\sqrt{a+a\,\sin\left(c+d\,x\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{\sqrt{a\left(\sin\left(c+dx\right)+1\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))**(1/2)/x,x)
[Out] Integral(sqrt(a*(sin(c + d*x) + 1))/x, x)
```

3.126 $\int \frac{\sqrt{a+a\sin(c+dx)}}{x^2}\,dx$

Optimal. Leaf size=130

$$-\frac{1}{2}d\sin\left(\frac{1}{4}(2c-\pi)\right)\text{Ci}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}-\frac{1}{2}d\sin\left(\frac{1}{4}(2c+\pi)\right)\text{Si}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right.$$

```
[Out] -(a+a*sin(d*x+c))^(1/2)/x+1/2*d*Ci(1/2*d*x)*csc(1/2*c+1/4*Pi+1/2*d*x)*cos(1
/2*c+1/4*Pi)*(a+a*sin(d*x+c))^(1/2)-1/2*d*csc(1/2*c+1/4*Pi+1/2*d*x)*Si(1/2*
d*x)*sin(1/2*c+1/4*Pi)*(a+a*sin(d*x+c))^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3319, 3297, 3303, 3299, 3302}

$$-\frac{1}{2}d\sin\left(\frac{1}{4}(2c-\pi)\right)\text{CosIntegral}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}-\frac{1}{2}d\sin\left(\frac{1}{4}(2c+\pi)\right)\text{Si}\left(\frac{dx}{2}\right)\csc\left(\right.$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sin[c + d*x]]/x^2,x]
```

```
[Out] -(Sqrt[a + a*Sin[c + d*x]]/x) - (d*CosIntegral[(d*x)/2]*Csc[c/2 + Pi/4 + (d
*x)/2]*Sin[(2*c - Pi)/4]*Sqrt[a + a*Sin[c + d*x]])/2 - (d*Csc[c/2 + Pi/4 +
(d*x)/2]*Sin[(2*c + Pi)/4]*Sqrt[a + a*Sin[c + d*x]]*SinIntegral[(d*x)/2])/2
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+a\sin(c+dx)}}{x^2}\,dx = \left(\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}\right)\int \frac{\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{x^2}\,dx$$

$$= -\frac{\sqrt{a+a\sin(c+dx)}}{x} + \frac{1}{2}\left(d\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}\right)\int \frac{\cos\left(\frac{c}{2}+\frac{\pi}{4}\right.}{x}$$

$$= -\frac{\sqrt{a+a\sin(c+dx)}}{x} - \frac{1}{2}\left(d\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sin\left(\frac{1}{4}(2c-\pi)\right)\sqrt{a+a\sin(c+dx)}\right.$$

$$= -\frac{\sqrt{a+a\sin(c+dx)}}{x} - \frac{1}{2}d\operatorname{Ci}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sin\left(\frac{1}{4}(2c-\pi)\right)\sqrt{a+a\sin(c}$$

Mathematica [A] time = 0.35, size = 117, normalized size = 0.90

$$\frac{\sqrt{a(\sin(c+dx)+1)}\left(dx\left(\cos\left(\frac{c}{2}\right)-\sin\left(\frac{c}{2}\right)\right)\operatorname{Ci}\left(\frac{dx}{2}\right)-dx\left(\sin\left(\frac{c}{2}\right)+\cos\left(\frac{c}{2}\right)\right)\operatorname{Si}\left(\frac{dx}{2}\right)-2\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\right.\right.\right.}{2x\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sin[c + d*x]]/x^2,x]
```

```
[Out] (Sqrt[a*(1 + Sin[c + d*x])]*(d*x*CosIntegral[(d*x)/2]*(Cos[c/2] - Sin[c/2])
 - 2*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) - d*x*(Cos[c/2] + Sin[c/2])*SinI
ntegral[(d*x)/2]))/(2*x*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]))
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/2)/x^2,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [C] time = 2.62, size = 1140, normalized size = 8.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/4*sqrt(2)*(d*x*imag_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x
 + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c)^2 - d*x*imag_part(cos_integral(-1/2*d*
x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c)^2 - d*x*r
eal_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4
*d*x)^2*tan(1/4*c)^2 - d*x*real_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*p
i + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c)^2 + 2*d*x*sgn(cos(-1/4*pi +
 1/2*d*x + 1/2*c))*sin_integral(1/2*d*x)*tan(1/4*d*x)^2*tan(1/4*c)^2 - 2*d*
x*imag_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(
1/4*d*x)^2*tan(1/4*c) + 2*d*x*imag_part(cos_integral(-1/2*d*x))*sgn(cos(-1/
4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c) - 2*d*x*real_part(cos_in
tegral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4
*c) - 2*d*x*real_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1
/2*c))*tan(1/4*d*x)^2*tan(1/4*c) - 4*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)
)*sin_integral(1/2*d*x)*tan(1/4*d*x)^2*tan(1/4*c) - d*x*imag_part(cos_integ
ral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2 + d*x*imag
_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d
*x)^2 + d*x*real_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/
2*c))*tan(1/4*d*x)^2 + d*x*real_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*p
i + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2 - 2*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1/
2*c))*sin_integral(1/2*d*x)*tan(1/4*d*x)^2 + d*x*imag_part(cos_integral(1/2
*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c)^2 - d*x*imag_part(cos
_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c)^2 - d*x
*real_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1
/4*c)^2 - d*x*real_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x +
 1/2*c))*tan(1/4*c)^2 + 2*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*sin_integ
ral(1/2*d*x)*tan(1/4*c)^2 - 2*d*x*imag_part(cos_integral(1/2*d*x))*sgn(cos(
-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c) + 2*d*x*imag_part(cos_integral(-1/2*
```

```
d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c) - 2*d*x*real_part(cos_
integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c) - 2*d*x*r
eal_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/
4*c) - 4*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*sin_integral(1/2*d*x)*tan(
1/4*c) - 4*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c)^2
- d*x*imag_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))
+ d*x*imag_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))
 + d*x*real_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))
 + d*x*real_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)
) - 2*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*sin_integral(1/2*d*x) + 8*sgn
(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c) + 8*sgn(cos(-1/4
*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)*tan(1/4*c)^2 + 4*sgn(cos(-1/4*pi + 1/2
*d*x + 1/2*c))*tan(1/4*d*x)^2 + 16*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(
1/4*d*x)*tan(1/4*c) + 4*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c)^2 -
8*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x) - 8*sgn(cos(-1/4*pi + 1/
2*d*x + 1/2*c))*tan(1/4*c) - 4*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)))*sqrt(a)
/(sqrt(2)*x*tan(1/4*d*x)^2*tan(1/4*c)^2 + sqrt(2)*x*tan(1/4*d*x)^2 + sqrt(2
)*x*tan(1/4*c)^2 + sqrt(2)*x)
```

maple [F] time = 0.07, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a + a \sin\left(dx + c\right)}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sin(d*x+c))^(1/2)/x^2,x)
```

```
[Out] int((a+a*sin(d*x+c))^(1/2)/x^2,x)
```

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

$$\int \frac{\sqrt{a \sin\left(dx + c\right) + a}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/2)/x^2,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sin(d*x + c) + a)/x^2, x)
```

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

$$\int \frac{\sqrt{a + a\,\sin\left(c + d\,x\right)}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(c + d*x))^(1/2)/x^2,x)
```

```
[Out] int((a + a*sin(c + d*x))^(1/2)/x^2, x)
```

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

$$\int \frac{\sqrt{a\,(\sin{(c+dx)}+1)}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))**(1/2)/x**2,x)
```

```
[Out] Integral(sqrt(a*(sin(c + d*x) + 1))/x**2, x)
```

3.127 $\int \frac{\sqrt{a+a\sin(c+dx)}}{x^3}\,dx$

Optimal. Leaf size=174

$$-\frac{1}{8}d^2\sin\left(\frac{1}{4}(2c+\pi)\right)\text{Ci}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}-\frac{1}{8}d^2\cos\left(\frac{1}{4}(2c+\pi)\right)\text{Si}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{dx}{2}\right.$$

```
[Out] -1/2*(a+a*sin(d*x+c))^(1/2)/x^2-1/4*d*cot(1/2*c+1/4*Pi+1/2*d*x)*(a+a*sin(d*
x+c))^(1/2)/x-1/8*d^2*cos(1/2*c+1/4*Pi)*csc(1/2*c+1/4*Pi+1/2*d*x)*Si(1/2*d*
x)*(a+a*sin(d*x+c))^(1/2)-1/8*d^2*Ci(1/2*d*x)*csc(1/2*c+1/4*Pi+1/2*d*x)*sin
(1/2*c+1/4*Pi)*(a+a*sin(d*x+c))^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3319, 3297, 3303, 3299, 3302}

$$-\frac{1}{8}d^2\sin\left(\frac{1}{4}(2c+\pi)\right)\text{CosIntegral}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(c+dx)+a}-\frac{1}{8}d^2\cos\left(\frac{1}{4}(2c+\pi)\right)\text{Si}\left(\frac{dx}{2}\right)\text{cs}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*Sin[c + d*x]]/x^3,x]
```

```
[Out] -Sqrt[a + a*Sin[c + d*x]]/(2*x^2) - (d*Cot[c/2 + Pi/4 + (d*x)/2]*Sqrt[a + a
*Sin[c + d*x]])/(4*x) - (d^2*CosIntegral[(d*x)/2]*Csc[c/2 + Pi/4 + (d*x)/2]
*Sin[(2*c + Pi)/4]*Sqrt[a + a*Sin[c + d*x]])/8 - (d^2*Cos[(2*c + Pi)/4]*Csc
[c/2 + Pi/4 + (d*x)/2]*Sqrt[a + a*Sin[c + d*x]]*SinIntegral[(d*x)/2])/8
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
```

```
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{\sqrt{a+a\sin(c+dx)}}{x^3}\,dx = \left(\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}\right)\int \frac{\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{x^3}\,dx$$

$$= -\frac{\sqrt{a+a\sin(c+dx)}}{2x^2}+\frac{1}{4}\left(d\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}\right)\int \frac{\cos\left(\frac{c}{2}+\frac{\pi}{4}+\right.}{x^2}$$

$$= -\frac{\sqrt{a+a\sin(c+dx)}}{2x^2}-\frac{d\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{4x}-\frac{1}{8}\left(d^2\csc\left(\frac{c}{2}+\frac{\pi}{4}+\right.\right.$$

$$= -\frac{\sqrt{a+a\sin(c+dx)}}{2x^2}-\frac{d\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{4x}-\frac{1}{8}\left(d^2\cos\left(\frac{1}{4}(2c+\pi\right.\right.$$

$$= -\frac{\sqrt{a+a\sin(c+dx)}}{2x^2}-\frac{d\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\sqrt{a+a\sin(c+dx)}}{4x}-\frac{1}{8}d^2\mathrm{Ci}\left(\frac{dx}{2}\right)\csc\left(\frac{c}{2}\right.$$

Mathematica [A] time = 0.36, size = 153, normalized size = 0.88

$$-\frac{\sqrt{a(\sin(c+dx)+1)}\left(d^2x^2\left(\sin\left(\frac{c}{2}\right)+\cos\left(\frac{c}{2}\right)\right)\mathrm{Ci}\left(\frac{dx}{2}\right)+d^2x^2\left(\cos\left(\frac{c}{2}\right)-\sin\left(\frac{c}{2}\right)\right)\mathrm{Si}\left(\frac{dx}{2}\right)-2dx\sin\left(\frac{1}{2}(c+dx)\right)+\right.}{8x^2\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[a + a*Sin[c + d*x]]/x^3,x]
```

```
[Out] -1/8*(Sqrt[a*(1 + Sin[c + d*x])]*(4*Cos[(c + d*x)/2] + 2*d*x*Cos[(c + d*x)/
2] + d^2*x^2*CosIntegral[(d*x)/2]*(Cos[c/2] + Sin[c/2]) + 4*Sin[(c + d*x)/2
] - 2*d*x*Sin[(c + d*x)/2] + d^2*x^2*(Cos[c/2] - Sin[c/2])*SinIntegral[(d*x
)/2]))/(x^2*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]))
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/2)/x^3,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [C] time = 2.08, size = 1487, normalized size = 8.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/16*sqrt(2)*(d^2*x^2*imag_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/
2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c)^2 - d^2*x^2*imag_part(cos_integra
l(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c)^
2 + d^2*x^2*real_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/
2*c))*tan(1/4*d*x)^2*tan(1/4*c)^2 + d^2*x^2*real_part(cos_integral(-1/2*d*x
))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c)^2 + 2*d^2*
x^2*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*sin_integral(1/2*d*x)*tan(1/4*d*x)^
2*tan(1/4*c)^2 + 2*d^2*x^2*imag_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi
 + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c) - 2*d^2*x^2*imag_part(cos_in
tegral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/
4*c) - 2*d^2*x^2*real_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x
 + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c) - 2*d^2*x^2*real_part(cos_integral(-1/
2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c) + 4*d
^2*x^2*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*sin_integral(1/2*d*x)*tan(1/4*d*
x)^2*tan(1/4*c) - d^2*x^2*imag_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi
+ 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2 + d^2*x^2*imag_part(cos_integral(-1/2*d*
x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2 - d^2*x^2*real_part(
cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2 -
 d^2*x^2*real_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*
```

```
c))*tan(1/4*d*x)^2 - 2*d^2*x^2*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*sin_inte
gral(1/2*d*x)*tan(1/4*d*x)^2 + d^2*x^2*imag_part(cos_integral(1/2*d*x))*sgn
(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c)^2 - d^2*x^2*imag_part(cos_integ
ral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c)^2 + d^2*x^2*r
eal_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4
*c)^2 + d^2*x^2*real_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x
 + 1/2*c))*tan(1/4*c)^2 + 2*d^2*x^2*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*sin
_integral(1/2*d*x)*tan(1/4*c)^2 + 2*d^2*x^2*imag_part(cos_integral(1/2*d*x)
)*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c) - 2*d^2*x^2*imag_part(cos_
integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c) - 2*d^2*
x^2*real_part(cos_integral(1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*ta
n(1/4*c) - 2*d^2*x^2*real_part(cos_integral(-1/2*d*x))*sgn(cos(-1/4*pi + 1/
2*d*x + 1/2*c))*tan(1/4*c) + 4*d^2*x^2*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*
sin_integral(1/2*d*x)*tan(1/4*c) - 4*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)
)*tan(1/4*d*x)^2*tan(1/4*c)^2 - d^2*x^2*imag_part(cos_integral(1/2*d*x))*sg
n(cos(-1/4*pi + 1/2*d*x + 1/2*c)) + d^2*x^2*imag_part(cos_integral(-1/2*d*x
))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)) - d^2*x^2*real_part(cos_integral(1/2
*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)) - d^2*x^2*real_part(cos_integral
(-1/2*d*x))*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)) - 2*d^2*x^2*sgn(cos(-1/4*pi
 + 1/2*d*x + 1/2*c))*sin_integral(1/2*d*x) - 8*d*x*sgn(cos(-1/4*pi + 1/2*d*
x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c) - 8*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1
/2*c))*tan(1/4*d*x)*tan(1/4*c)^2 + 4*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)
)*tan(1/4*d*x)^2 + 16*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)*
tan(1/4*c) + 4*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c)^2 - 8*sgn
(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)^2*tan(1/4*c)^2 + 8*d*x*sgn(co
s(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x) + 8*d*x*sgn(cos(-1/4*pi + 1/2*d*
x + 1/2*c))*tan(1/4*c) + 16*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x
)^2*tan(1/4*c) + 16*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x)*tan(1/
4*c)^2 - 4*d*x*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)) + 8*sgn(cos(-1/4*pi + 1/
2*d*x + 1/2*c))*tan(1/4*d*x)^2 + 32*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan
(1/4*d*x)*tan(1/4*c) + 8*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*c)^2 -
 16*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c))*tan(1/4*d*x) - 16*sgn(cos(-1/4*pi +
 1/2*d*x + 1/2*c))*tan(1/4*c) - 8*sgn(cos(-1/4*pi + 1/2*d*x + 1/2*c)))*sqrt
(a)/(sqrt(2)*x^2*tan(1/4*d*x)^2*tan(1/4*c)^2 + sqrt(2)*x^2*tan(1/4*d*x)^2 +
 sqrt(2)*x^2*tan(1/4*c)^2 + sqrt(2)*x^2)
```

maple [F] time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{a + a\sin(dx + c)}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sin(d*x+c))^(1/2)/x^3,x)
```

```
[Out] int((a+a*sin(d*x+c))^(1/2)/x^3,x)
```

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

$$\int \frac{\sqrt{a \sin(dx + c) + a}}{x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/2)/x^3,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*sin(d*x + c) + a)/x^3, x)
```

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

$$\int \frac{\sqrt{a + a \sin(c + d x)}}{x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(c + d*x))^(1/2)/x^3,x)
```

```
[Out] int((a + a*sin(c + d*x))^(1/2)/x^3, x)
```

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

$$\int \frac{\sqrt{a (\sin(c + dx) + 1)}}{x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))**(1/2)/x**3,x)
```

```
[Out] Integral(sqrt(a*(sin(c + d*x) + 1))/x**3, x)
```

3.128 $\int x^3(a + a\sin(e + fx))^{3/2}\,dx$

Optimal. Leaf size=337

$$-\frac{64a\sin^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}}{27f^4}-\frac{1280a\sqrt{a\sin(e+fx)+a}}{9f^4}+\frac{32ax\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\cos\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{9f^3}$$

```
[Out] -1280/9*a*(a+a*sin(f*x+e))^(1/2)/f^4+16*a*x^2*(a+a*sin(f*x+e))^(1/2)/f^2+64
0/9*a*x*cot(1/2*e+1/4*Pi+1/2*f*x)*(a+a*sin(f*x+e))^(1/2)/f^3-8/3*a*x^3*cot(
1/2*e+1/4*Pi+1/2*f*x)*(a+a*sin(f*x+e))^(1/2)/f+32/9*a*x*cos(1/2*e+1/4*Pi+1/
2*f*x)*sin(1/2*e+1/4*Pi+1/2*f*x)*(a+a*sin(f*x+e))^(1/2)/f^3-4/3*a*x^3*cos(1
/2*e+1/4*Pi+1/2*f*x)*sin(1/2*e+1/4*Pi+1/2*f*x)*(a+a*sin(f*x+e))^(1/2)/f-64/
27*a*sin(1/2*e+1/4*Pi+1/2*f*x)^2*(a+a*sin(f*x+e))^(1/2)/f^4+8/3*a*x^2*sin(1
/2*e+1/4*Pi+1/2*f*x)^2*(a+a*sin(f*x+e))^(1/2)/f^2
```

Rubi [A] time = 0.23, antiderivative size = 337, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3319, 3311, 3296, 2638, 3310}

$$\frac{8ax^2\sin^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}}{3f^2}+\frac{16ax^2\sqrt{a\sin(e+fx)+a}}{f^2}-\frac{64a\sin^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}}{27f^4}$$

Antiderivative was successfully verified.

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

```
[Out] (-1280*a*Sqrt[a + a*Sin[e + f*x]])/(9*f^4) + (16*a*x^2*Sqrt[a + a*Sin[e + f
*x]])/f^2 + (640*a*x*Cot[e/2 + Pi/4 + (f*x)/2]*Sqrt[a + a*Sin[e + f*x]])/(9
*f^3) - (8*a*x^3*Cot[e/2 + Pi/4 + (f*x)/2]*Sqrt[a + a*Sin[e + f*x]])/(3*f)
+ (32*a*x*Cos[e/2 + Pi/4 + (f*x)/2]*Sin[e/2 + Pi/4 + (f*x)/2]*Sqrt[a + a*Si
n[e + f*x]])/(9*f^3) - (4*a*x^3*Cos[e/2 + Pi/4 + (f*x)/2]*Sin[e/2 + Pi/4 +
(f*x)/2]*Sqrt[a + a*Sin[e + f*x]])/(3*f) - (64*a*Sin[e/2 + Pi/4 + (f*x)/2]^
2*Sqrt[a + a*Sin[e + f*x]])/(27*f^4) + (8*a*x^2*Sin[e/2 + Pi/4 + (f*x)/2]^2
*Sqrt[a + a*Sin[e + f*x]])/(3*f^2)
```

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

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

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^3(a+a\sin(e+fx))^{3/2}\,dx = \left(2a\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}\right)\int x^3\sin^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)dx$$

$$= -\frac{4ax^3\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{3f} + \frac{8ax^2\sin^2\left(\frac{e}{2}+\frac{\pi}{4}\right.}{}$$

$$= -\frac{8ax^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{3f} + \frac{32ax\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{e}{2}+\frac{\pi}{4}\right.}{9f^3}$$

$$= \frac{16ax^2\sqrt{a+a\sin(e+fx)}}{f^2} + \frac{64ax\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{9f^3} - \frac{8ax^3\text{co}}{}$$

$$= -\frac{128a\sqrt{a+a\sin(e+fx)}}{9f^4} + \frac{16ax^2\sqrt{a+a\sin(e+fx)}}{f^2} + \frac{640ax\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{9f^3}$$

$$= -\frac{1280a\sqrt{a+a\sin(e+fx)}}{9f^4} + \frac{16ax^2\sqrt{a+a\sin(e+fx)}}{f^2} + \frac{640ax\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right.}{9f}$$

Mathematica [A] time = 1.33, size = 231, normalized size = 0.69

$$\frac{2a\sqrt{a(\sin(e+fx)+1)}\left(-\cos(fx)\left(2\sin(e)\left(8-9f^2x^2\right)+3fx\cos(e)\left(3f^2x^2-8\right)\right)+\sin(fx)\left(3fx\sin(e)\left(3f^2x^2-\right.\right.\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (2*a*((-2*((968 - 480*f*x - 117*f^2*x^2 + 18*f^3*x^3)*Cos[e/2] + (968 + 480
*f*x - 117*f^2*x^2 - 18*f^3*x^3)*Sin[e/2]))/(Cos[e/2] + Sin[e/2]) - Cos[f*x
]*(3*f*x*(-8 + 3*f^2*x^2)*Cos[e] + 2*(8 - 9*f^2*x^2)*Sin[e]) + (2*(-8 + 9*f
^2*x^2)*Cos[e] + 3*f*x*(-8 + 3*f^2*x^2)*Sin[e])*Sin[f*x] + (24*f*x*(-80 + 3
*f^2*x^2)*Sin[(f*x)/2])/((Cos[e/2] + Sin[e/2])*(Cos[(e + f*x)/2] + Sin[(e +
 f*x)/2])))*Sqrt[a*(1 + Sin[e + f*x])])/(27*f^4)
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check
 sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)sq
rt(2*a)*(-(48*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))-2*a*f^3*x^3*sign(cos
(1/2*(f*x+exp(1))-1/4*pi)))*sin(1/4*(2*f*x-pi)+1/2*exp(1))/f^4+1/2*(48*a*f*
x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))-2*a*f^3*x^3*sign(cos(1/2*(f*x+exp(1))-
1/4*pi)))*cos(1/4*(2*f*x+2*exp(1)+pi))/f^4+1/162*(144*a*f*x*sign(cos(1/2*(f
*x+exp(1))-1/4*pi))-54*a*f^3*x^3*sign(cos(1/2*(f*x+exp(1))-1/4*pi)))*cos(1/
4*(6*f*x+6*exp(1)-pi))/f^4+1/2*(-96*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))+12
*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi)))*sin(1/4*(2*f*x+2*exp(1)+pi))
/f^4+(-96*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))+12*a*f^2*x^2*sign(cos(1/2*(f
*x+exp(1))-1/4*pi)))*cos(1/4*(2*f*x-pi)+1/2*exp(1))/f^4+1/162*(-96*a*sign(c
os(1/2*(f*x+exp(1))-1/4*pi))+108*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi
)))*sin(1/4*(6*f*x+6*exp(1)-pi))/f^4)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int x^{3} \left(a + a\sin\left(f x + e\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(x^3*(a+a*sin(f*x+e))^(3/2),x)
```

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

$$\int \left(a\sin\left(f x + e\right) + a\right)^{\frac{3}{2}} x^{3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a*sin(f*x + e) + a)^(3/2)*x^3, x)
```

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

$$\int x^3 \left(a + a \sin\left(e + f x\right)\right)^{3/2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(x^3*(a + a*sin(e + f*x))^(3/2), x)
```

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

$$\int x^{3} \left(a \left(\sin{\left(e + f x \right)} + 1\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.129 $\int x^2(a + a\sin(e + fx))^{3/2}\,dx$

Optimal. Leaf size=271

$$\frac{224a\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}}{9f^3}-\frac{32a\cos^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}}{27f^3}+\frac{16ax\,s}{}$$

```
[Out] 32/3*a*x*(a+a*sin(f*x+e))^(1/2)/f^2+224/9*a*cot(1/2*e+1/4*Pi+1/2*f*x)*(a+a*
sin(f*x+e))^(1/2)/f^3-8/3*a*x^2*cot(1/2*e+1/4*Pi+1/2*f*x)*(a+a*sin(f*x+e))^
(1/2)/f-32/27*a*cos(1/2*e+1/4*Pi+1/2*f*x)^2*cot(1/2*e+1/4*Pi+1/2*f*x)*(a+a*
sin(f*x+e))^(1/2)/f^3-4/3*a*x^2*cos(1/2*e+1/4*Pi+1/2*f*x)*sin(1/2*e+1/4*Pi+
1/2*f*x)*(a+a*sin(f*x+e))^(1/2)/f+16/9*a*x*sin(1/2*e+1/4*Pi+1/2*f*x)^2*(a+a
*sin(f*x+e))^(1/2)/f^2
```

Rubi [A] time = 0.18, antiderivative size = 271, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3319, 3311, 3296, 2638, 2633}

$$\frac{16ax\sin^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}}{9f^2}+\frac{32ax\sqrt{a\sin(e+fx)+a}}{3f^2}+\frac{224a\cot\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+}}{9f^3}$$

Antiderivative was successfully verified.

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

```
[Out] (32*a*x*Sqrt[a + a*Sin[e + f*x]])/(3*f^2) + (224*a*Cot[e/2 + Pi/4 + (f*x)/2
]*Sqrt[a + a*Sin[e + f*x]])/(9*f^3) - (8*a*x^2*Cot[e/2 + Pi/4 + (f*x)/2]*Sq
rt[a + a*Sin[e + f*x]])/(3*f) - (32*a*Cos[e/2 + Pi/4 + (f*x)/2]^2*Cot[e/2 +
 Pi/4 + (f*x)/2]*Sqrt[a + a*Sin[e + f*x]])/(27*f^3) - (4*a*x^2*Cos[e/2 + Pi
/4 + (f*x)/2]*Sin[e/2 + Pi/4 + (f*x)/2]*Sqrt[a + a*Sin[e + f*x]])/(3*f) + (
16*a*x*Sin[e/2 + Pi/4 + (f*x)/2]^2*Sqrt[a + a*Sin[e + f*x]])/(9*f^2)
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x^2(a+a\sin(e+fx))^{3/2}\,dx = \left(2a\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}\right)\int x^2\sin^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)dx$$

$$= -\frac{4ax^2\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{3f} + \frac{16ax\sin^2\left(\frac{e}{2}+\frac{\pi}{4}\right.}{}$$

$$= -\frac{8ax^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{3f} - \frac{4ax^2\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{e}{2}+\frac{\pi}{4}\right.}{3f}$$

$$= \frac{32ax\sqrt{a+a\sin(e+fx)}}{3f^2} + \frac{32a\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{9f^3} - \frac{8ax^2\cot}{}$$

$$= \frac{32ax\sqrt{a+a\sin(e+fx)}}{3f^2} + \frac{224a\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{9f^3} - \frac{8ax^2\cot}{}$$

Mathematica [A] time = 0.98, size = 191, normalized size = 0.70

$$\frac{2a\sqrt{a(\sin(e+fx)+1)}\left(-\frac{4\left(\sin\left(\frac{e}{2}\right)\left(-9f^2x^2-39fx+80\right)+\cos\left(\frac{e}{2}\right)\left(9f^2x^2-39fx-80\right)\right)}{\sin\left(\frac{e}{2}\right)+\cos\left(\frac{e}{2}\right)}-\cos(fx)\left(\cos(e)\left(9f^2x^2-8\right)-12fx\sin(\right.\right.}{27f^3}$$

Antiderivative was successfully verified.

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

```
[Out] (2*a*((-4*((-80 - 39*f*x + 9*f^2*x^2)*Cos[e/2] + (80 - 39*f*x - 9*f^2*x^2)*
Sin[e/2]))/(Cos[e/2] + Sin[e/2]) - Cos[f*x]*((-8 + 9*f^2*x^2)*Cos[e] - 12*f
*x*Sin[e]) + (12*f*x*Cos[e] + (-8 + 9*f^2*x^2)*Sin[e])*Sin[f*x] + (8*(-80 +
 9*f^2*x^2)*Sin[(f*x)/2])/((Cos[e/2] + Sin[e/2])*(Cos[(e + f*x)/2] + Sin[(e
 + f*x)/2])))*Sqrt[a*(1 + Sin[e + f*x])])/(27*f^3)
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to
check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x
/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/
x/2)>(-4*pi/x/2)sqrt(2*a)*(-f^3*(16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))-2*
a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi)))*sin(1/4*(2*f*x-pi)+1/2*exp(1)
)/(-f^3)^2+2*f^3*(16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))-2*a*f^2*x^2*sign(
cos(1/2*(f*x+exp(1))-1/4*pi)))*cos(1/4*(2*f*x+2*exp(1)+pi))/(-2*f^3)^2+54*f
^3*(16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))-18*a*f^2*x^2*sign(cos(1/2*(f*x+
```

```
exp(1))-1/4*pi)))*cos(1/4*(6*f*x+6*exp(1)-pi))/(-54*f^3)^2+16*a*f^4*x*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*sin(1/4*(2*f*x+2*exp(1)+pi))/(-2*f^3)^2+1296*
a*f^4*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*sin(1/4*(6*f*x+6*exp(1)-pi))/(-5
4*f^3)^2+8*a*f^4*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*cos(1/4*(2*f*x-pi)+1/
2*exp(1))/(-f^3)^2)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int x^{2} \left(a + a \sin \left(f x + e\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a+a*sin(f*x+e))^(3/2),x)
[Out] int(x^2*(a+a*sin(f*x+e))^(3/2),x)
```

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

$$\int \left(a \sin \left(f x + e\right) + a\right)^{\frac{3}{2}} x^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int x^2\,{\left(a+a\,\sin\left(e+f\,x\right)\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + a*sin(e + f*x))^(3/2),x)
[Out] int(x^2*(a + a*sin(e + f*x))^(3/2), x)
```

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

$$\int x^{2} \left(a \left(\sin{\left(e + f x \right)} + 1\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(a+a*sin(f*x+e))**(3/2),x)
[Out] Integral(x**2*(a*(sin(e + f*x) + 1))**(3/2), x)
```

3.130 $\int x(a+a\sin(e+fx))^{3/2}\,dx$

Optimal. Leaf size=165

$$\frac{8a\sin^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}}{9f^2}+\frac{16a\sqrt{a\sin(e+fx)+a}}{3f^2}-\frac{4ax\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\cos\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}}{3f}$$

```
[Out] 16/3*a*(a+a*sin(f*x+e))^(1/2)/f^2-8/3*a*x*cot(1/2*e+1/4*Pi+1/2*f*x)*(a+a*si
n(f*x+e))^(1/2)/f-4/3*a*x*cos(1/2*e+1/4*Pi+1/2*f*x)*sin(1/2*e+1/4*Pi+1/2*f*
x)*(a+a*sin(f*x+e))^(1/2)/f+8/9*a*sin(1/2*e+1/4*Pi+1/2*f*x)^2*(a+a*sin(f*x+
e))^(1/2)/f^2
```

Rubi [A] time = 0.09, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3319, 3310, 3296, 2638}

$$\frac{8a\sin^2\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}}{9f^2}+\frac{16a\sqrt{a\sin(e+fx)+a}}{3f^2}-\frac{4ax\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\cos\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}}{3f}$$

Antiderivative was successfully verified.

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

```
[Out] (16*a*Sqrt[a + a*Sin[e + f*x]])/(3*f^2) - (8*a*x*Cot[e/2 + Pi/4 + (f*x)/2]*
Sqrt[a + a*Sin[e + f*x]])/(3*f) - (4*a*x*Cos[e/2 + Pi/4 + (f*x)/2]*Sin[e/2
+ Pi/4 + (f*x)/2]*Sqrt[a + a*Sin[e + f*x]])/(3*f) + (8*a*Sin[e/2 + Pi/4 + (
f*x)/2]^2*Sqrt[a + a*Sin[e + f*x]])/(9*f^2)
```

Rule 2638

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

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
```

```
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int x(a+a\sin(e+fx))^{3/2}\,dx = \left(2a\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}\right)\int x\sin^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)dx$$
$$= -\frac{4ax\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{3f}+\frac{8a\sin^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{f}{2}\right.}{}$$
$$= -\frac{8ax\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{3f}-\frac{4ax\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{f}{2}\right.}{3f}$$
$$= \frac{16a\sqrt{a+a\sin(e+fx)}}{3f^2}-\frac{8ax\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{3f}-\frac{4ax\cos\left(\frac{e}{2}\right.}{}$$

Mathematica [A] time = 0.71, size = 113, normalized size = 0.68

$$-\frac{(a(\sin(e+fx)+1))^{3/2}\left(27(fx-2)\cos\left(\frac{1}{2}(e+fx)\right)+(3fx+2)\cos\left(\frac{3}{2}(e+fx)\right)+2\sin\left(\frac{1}{2}(e+fx)\right)((3fx-2)\cos\right.}{9f^2\left(\sin\left(\frac{1}{2}(e+fx)\right)+\cos\left(\frac{1}{2}(e+fx)\right)\right)^3}$$

Antiderivative was successfully verified.

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

```
[Out] -1/9*((27*(-2 + f*x)*Cos[(e + f*x)/2] + (2 + 3*f*x)*Cos[(3*(e + f*x))/2] +
2*(-4*(7 + 3*f*x) + (-2 + 3*f*x)*Cos[e + f*x])*Sin[(e + f*x)/2])*(a*(1 + Si
n[e + f*x]))^(3/2))/(f^2*(Cos[(e + f*x)/2] + Sin[(e + f*x)/2])^3)
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] Exception raised: TypeError >> Error detected within library code: integ rate: implementation incomplete (has polynomial part)

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

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4 *pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)sqrt(2*a)*(2*a*sign(cos(1/2*(f*x+exp(1))- 1/4*pi))*sin(1/4*(2*f*x+2*exp(1)+pi))/f^2+2/9*a*sign(cos(1/2*(f*x+exp(1))-1 /4*pi))*sin(1/4*(6*f*x+6*exp(1)-pi))/f^2+4*a*sign(cos(1/2*(f*x+exp(1))-1/4* pi))*cos(1/4*(2*f*x-pi)+1/2*exp(1))/f^2+2*a*x*sign(cos(1/2*(f*x+exp(1))-1/4 *pi))*sin(1/4*(2*f*x-pi)+1/2*exp(1))/f-a*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*cos(1/4*(2*f*x+2*exp(1)+pi))/f-1/3*a*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*cos(1/4*(6*f*x+6*exp(1)-pi))/f)

maple [F] time = 0.04, size = 0, normalized size = 0.00

$$\int x \left(a + a \sin \left(f x + e\right)\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(x*(a+a*sin(f*x+e))^(3/2),x)

[Out] int(x*(a+a*sin(f*x+e))^(3/2),x)

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

$$\int \left(a \sin \left(f x + e\right) + a\right)^{\frac{3}{2}} x\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

[Out] integrate((a*sin(f*x + e) + a)^(3/2)*x, x)

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

$$\int x\left(a+a\,\sin\left(e+f\,x\right)\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + a*sin(e + f*x))^(3/2),x)
[Out] int(x*(a + a*sin(e + f*x))^(3/2), x)
```

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

$$\int x\left(a\left(\sin\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(a+a*sin(f*x+e))**(3/2),x)
[Out] Integral(x*(a*(sin(e + f*x) + 1))**(3/2), x)
```

3.131 $\int \frac{(a+a\sin(e+fx))^{3/2}}{x}\,dx$

Optimal. Leaf size=221

$$\frac{3}{2}a\sin\left(\frac{1}{4}(2e+\pi)\right)\text{Ci}\left(\frac{fx}{2}\right)\csc\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}+\frac{1}{2}a\cos\left(\frac{3}{4}(2e-\pi)\right)\text{Ci}\left(\frac{3fx}{2}\right)\csc\left(\frac{e}{2}+\frac{fx}{2}+\right.$$

```
[Out] -1/2*a*Ci(3/2*f*x)*cos(3/2*e+1/4*Pi)*csc(1/2*e+1/4*Pi+1/2*f*x)*(a+a*sin(f*x
+e))^(1/2)+3/2*a*cos(1/2*e+1/4*Pi)*csc(1/2*e+1/4*Pi+1/2*f*x)*Si(1/2*f*x)*(a
+a*sin(f*x+e))^(1/2)+1/2*a*csc(1/2*e+1/4*Pi+1/2*f*x)*Si(3/2*f*x)*sin(3/2*e+
1/4*Pi)*(a+a*sin(f*x+e))^(1/2)+3/2*a*Ci(1/2*f*x)*csc(1/2*e+1/4*Pi+1/2*f*x)*
sin(1/2*e+1/4*Pi)*(a+a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 221, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3319, 3312, 3303, 3299, 3302}

$$\frac{3}{2}a\sin\left(\frac{1}{4}(2e+\pi)\right)\text{CosIntegral}\left(\frac{fx}{2}\right)\csc\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}+\frac{1}{2}a\cos\left(\frac{3}{4}(2e-\pi)\right)\text{CosIntegral}$$

Antiderivative was successfully verified.

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

```
[Out] (a*Cos[(3*(2*e - Pi))/4]*CosIntegral[(3*f*x)/2]*Csc[e/2 + Pi/4 + (f*x)/2]*S
qrt[a + a*Sin[e + f*x]])/2 + (3*a*CosIntegral[(f*x)/2]*Csc[e/2 + Pi/4 + (f*
x)/2]*Sin[(2*e + Pi)/4]*Sqrt[a + a*Sin[e + f*x]])/2 + (3*a*Cos[(2*e + Pi)/4
]*Csc[e/2 + Pi/4 + (f*x)/2]*Sqrt[a + a*Sin[e + f*x]]*SinIntegral[(f*x)/2])/
2 - (a*Csc[e/2 + Pi/4 + (f*x)/2]*Sin[(3*(2*e - Pi))/4]*Sqrt[a + a*Sin[e + f
*x]]*SinIntegral[(3*f*x)/2])/2
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
```

```
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+a\sin(e+fx))^{3/2}}{x}\,dx = \left(2a\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}\right)\int \frac{\sin^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{x}\,dx$$

$$= \left(2a\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}\right)\int \left(\frac{3\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{4x}+\frac{\sin\left(\frac{3e}{2}-\frac{\pi}{4}+\right.}{4x}\right.$$

$$= \frac{1}{2}\left(a\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}\right)\int \frac{\sin\left(\frac{3e}{2}-\frac{\pi}{4}+\frac{3fx}{2}\right)}{x}\,dx+\frac{1}{2}\left(3a\csc\left(\right.\right.$$

$$= \frac{1}{2}\left(a\cos\left(\frac{3}{4}(2e-\pi)\right)\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}\right)\int \frac{\cos\left(\frac{3fx}{2}\right)}{x}\,dx+\frac{1}{2}\left(\right.$$

$$= \frac{1}{2}a\cos\left(\frac{3}{4}(2e-\pi)\right)\text{Ci}\left(\frac{3fx}{2}\right)\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}+\frac{3}{2}a\text{Ci}\left(\frac{fx}{2}\right)$$

Mathematica [A] time = 0.73, size = 127, normalized size = 0.57

$$\frac{(a(\sin(e+fx)+1))^{3/2}\left(3\text{Ci}\left(\frac{fx}{2}\right)\left(\sin\left(\frac{e}{2}\right)+\cos\left(\frac{e}{2}\right)\right)+\text{Ci}\left(\frac{3fx}{2}\right)\left(\sin\left(\frac{3e}{2}\right)-\cos\left(\frac{3e}{2}\right)\right)+\left(\cos\left(\frac{e}{2}\right)-\sin\left(\frac{e}{2}\right)\right)\left((2\sin\right.\right.}{2\left(\sin\left(\frac{1}{2}(e+fx)\right)+\cos\left(\frac{1}{2}(e+fx)\right)\right)^3}$$

Antiderivative was successfully verified.

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

```
[Out] ((a*(1 + Sin[e + f*x]))^(3/2)*(3*CosIntegral[(f*x)/2]*(Cos[e/2] + Sin[e/2])
 + CosIntegral[(3*f*x)/2]*(-Cos[(3*e)/2] + Sin[(3*e)/2]) + (Cos[e/2] - Sin[
e/2])*(3*SinIntegral[(f*x)/2] + (1 + 2*Sin[e])*SinIntegral[(3*f*x)/2])))/(2
*(Cos[(e + f*x)/2] + Sin[(e + f*x)/2])^3)
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
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ble to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(
-4*pi/x/2)sqrt(2*a)*(6*a*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))+2*a
*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))+3*a*sign(cos(1/2*(f*x+exp(1
))-1/4*pi))*im(Ci(1/2*f*x))+a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*
f*x))-3*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))-a*sign(cos(1/
2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))+3*a*sign(cos(1/2*(f*x+exp(1))-1/4*
pi))*re(Ci(1/2*f*x))-a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))+3
*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))-a*sign(cos(1/2*(f*x+
exp(1))-1/4*pi))*re(Ci(-3/2*f*x))-6*a*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))
-1/4*pi))*tan(1/4*exp(1))^2+6*a*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*p
i))*tan(3/4*exp(1))^2-12*a*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*t
an(1/4*exp(1))+2*a*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*e
xp(1))^2-2*a*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))
^2+4*a*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))-3*a*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))^2+3*a*sig
n(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(3/4*exp(1))^2-6*a*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))+a*sign(cos(1/
2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2-a*sign(cos(1/2*(f
*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))^2+2*a*sign(cos(1/2*(f*x
+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))+3*a*sign(cos(1/2*(f*x+exp
(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2-3*a*sign(cos(1/2*(f*x+exp(
1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(3/4*exp(1))^2+6*a*sign(cos(1/2*(f*x+exp(1
))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))-a*sign(cos(1/2*(f*x+exp(1))-1/
4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2+a*sign(cos(1/2*(f*x+exp(1))-1/4*p
i))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))^2-2*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi
))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))-3*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*
re(Ci(1/2*f*x))*tan(1/4*exp(1))^2+3*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re
(Ci(1/2*f*x))*tan(3/4*exp(1))^2+6*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(C
i(1/2*f*x))*tan(1/4*exp(1))-a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*

```
f*x))*tan(1/4*exp(1))^2+a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x)
)*tan(3/4*exp(1))^2+2*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*
tan(3/4*exp(1))-3*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan
(1/4*exp(1))^2+3*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(
3/4*exp(1))^2+6*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1
/4*exp(1))-a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*ex
p(1))^2+a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*exp(1
))^2+2*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*exp(1)
)-6*a*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(
3/4*exp(1))^2-12*a*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*e
xp(1))*tan(3/4*exp(1))^2-2*a*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))
*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+4*a*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(
1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))-3*a*sign(cos(1/2*(f*x+exp(1)
)-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2-6*a*sign(cos
(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^
2-a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*ta
n(3/4*exp(1))^2+2*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(
1/4*exp(1))^2*tan(3/4*exp(1))+3*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(
-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+6*a*sign(cos(1/2*(f*x+exp(1)
)-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2+a*sign(cos(1/
2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^
2-2*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2
*tan(3/4*exp(1))-3*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan
(1/4*exp(1))^2*tan(3/4*exp(1))^2+6*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(
Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2+a*sign(cos(1/2*(f*x+exp(1))-
1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+2*a*sign(cos(1
/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))-
3*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*t
an(3/4*exp(1))^2+6*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*ta
n(1/4*exp(1))*tan(3/4*exp(1))^2+a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(
-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+2*a*sign(cos(1/2*(f*x+exp(1)
)-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1)))/(4*sqrt(2)*t
an(1/4*exp(1))^2*tan(3/4*exp(1))^2+4*sqrt(2)*tan(1/4*exp(1))^2+4*sqrt(2)*ta
n(3/4*exp(1))^2+4*sqrt(2))
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{\left(a + a \sin\left(f x + e\right)\right)^{\frac{3}{2}}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+a*sin(f*x+e))^(3/2)/x,x)
```

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

$$\int \frac{\left(a \sin\left(fx + e\right) + a\right)^{\frac{3}{2}}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a*sin(f*x + e) + a)^(3/2)/x, x)
```

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

$$\int \frac{\left(a + a\, \sin\left(e + f\,x\right)\right)^{3/2}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + a*sin(e + f*x))^(3/2)/x, x)
```

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

$$\int \frac{\left(a \left(\sin\left(e + fx\right) + 1\right)\right)^{\frac{3}{2}}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.132 $\int \frac{(a+a\sin(e+fx))^{3/2}}{x^2}\,dx$

Optimal. Leaf size=263

$$-\frac{3}{4}af\sin\left(\frac{1}{4}(2e-\pi)\right)\text{Ci}\left(\frac{fx}{2}\right)\csc\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}+\frac{3}{4}af\sin\left(\frac{1}{4}(6e+\pi)\right)\text{Ci}\left(\frac{3fx}{2}\right)\csc\left(\frac{e}{2}+\right.$$

```
[Out] 3/4*a*f*cos(3/2*e+1/4*Pi)*csc(1/2*e+1/4*Pi+1/2*f*x)*Si(3/2*f*x)*(a+a*sin(f*
x+e))^(1/2)+3/4*a*f*Ci(1/2*f*x)*csc(1/2*e+1/4*Pi+1/2*f*x)*cos(1/2*e+1/4*Pi)
*(a+a*sin(f*x+e))^(1/2)-3/4*a*f*csc(1/2*e+1/4*Pi+1/2*f*x)*Si(1/2*f*x)*sin(1
/2*e+1/4*Pi)*(a+a*sin(f*x+e))^(1/2)+3/4*a*f*Ci(3/2*f*x)*csc(1/2*e+1/4*Pi+1/
2*f*x)*sin(3/2*e+1/4*Pi)*(a+a*sin(f*x+e))^(1/2)-2*a*sin(1/2*e+1/4*Pi+1/2*f*
x)^2*(a+a*sin(f*x+e))^(1/2)/x
```

Rubi [A] time = 0.30, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3319, 3313, 3303, 3299, 3302}

$$-\frac{3}{4}af\sin\left(\frac{1}{4}(2e-\pi)\right)\text{CosIntegral}\left(\frac{fx}{2}\right)\csc\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}+\frac{3}{4}af\sin\left(\frac{1}{4}(6e+\pi)\right)\text{CosInteg}$$

Antiderivative was successfully verified.

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

```
[Out] (-3*a*f*CosIntegral[(f*x)/2]*Csc[e/2 + Pi/4 + (f*x)/2]*Sin[(2*e - Pi)/4]*Sq
rt[a + a*Sin[e + f*x]])/4 + (3*a*f*CosIntegral[(3*f*x)/2]*Csc[e/2 + Pi/4 +
(f*x)/2]*Sin[(6*e + Pi)/4]*Sqrt[a + a*Sin[e + f*x]])/4 - (2*a*Sin[e/2 + Pi/
4 + (f*x)/2]^2*Sqrt[a + a*Sin[e + f*x]])/x - (3*a*f*Csc[e/2 + Pi/4 + (f*x)/
2]*Sin[(2*e + Pi)/4]*Sqrt[a + a*Sin[e + f*x]]*SinIntegral[(f*x)/2])/4 + (3*
a*f*Cos[(6*e + Pi)/4]*Csc[e/2 + Pi/4 + (f*x)/2]*Sqrt[a + a*Sin[e + f*x]]*Si
nIntegral[(3*f*x)/2])/4
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+a\sin(e+fx))^{3/2}}{x^2}\,dx = \left(2a\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}\right)\int \frac{\sin^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{x^2}\,dx$$

$$= -\frac{2a\sin^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{x} + \left(3af\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e$$

$$= -\frac{2a\sin^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{x} + \frac{1}{4}\left(3af\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin$$

$$= -\frac{2a\sin^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{x} + \frac{1}{4}\left(3af\cos\left(\frac{1}{4}(6e+\pi)\right)\csc\left(\frac{e}{2}+\frac{\pi}{4}+$$

$$= -\frac{3}{4}af\operatorname{Ci}\left(\frac{fx}{2}\right)\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{1}{4}(2e-\pi)\right)\sqrt{a+a\sin(e+fx)} + \frac{3}{4}af\operatorname{Ci}\left(\frac{3f}{2}$$

Mathematica [C] time = 0.99, size = 226, normalized size = 0.86

$$\frac{i\left(-iae^{-i(e+fx)}\left(e^{i(e+fx)}+i\right)^2\right)^{3/2}\left(3fxe^{ie+\frac{3ifx}{2}}\text{Ei}\left(-\frac{1}{2}ifx\right)+3ifxe^{2ie+\frac{3ifx}{2}}\text{Ei}\left(\frac{ifx}{2}\right)+3fxe^{\frac{3}{2}i(2e+fx)}\text{Ei}\left(\frac{3ifx}{2}\right)-6ie^{i(e+fx}\right.}{4\sqrt{2}x\left(e^{i(e+fx)}+i\right)^3}$$

Antiderivative was successfully verified.

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

```
[Out] ((I/4)*(((-I)*a*(I + E^(I*(e + f*x)))^2)/E^(I*(e + f*x)))^(3/2)*(2 - (6*I)*
E^(I*(e + f*x)) - 6*E^((2*I)*(e + f*x)) + (2*I)*E^((3*I)*(e + f*x)) + 3*E^(
I*e + ((3*I)/2)*f*x)*f*x*ExpIntegralEi[(-1/2*I)*f*x] + (3*I)*E^((2*I)*e + (
(3*I)/2)*f*x)*f*x*ExpIntegralEi[(I/2)*f*x] + (3*I)*E^(((3*I)/2)*f*x)*f*x*Ex
pIntegralEi[((-3*I)/2)*f*x] + 3*E^(((3*I)/2)*(2*e + f*x))*f*x*ExpIntegralEi
[((3*I)/2)*f*x]))/(Sqrt[2]*(I + E^(I*(e + f*x)))^3*x)
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
e to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4
*pi/x/2)Unable to check sign: (4*pi/x/2)>(-4*pi/x/2)Unable to check sign: (
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*x+exp(1))-1/4*pi))+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))
^2-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2+16*a*sign(cos(
1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2-16*a*sign(cos(1/2*(f*x+exp(1))-1/4
*pi))*tan(3/4*f*x)^2-24*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1)
)-8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))-24*a*sign(cos(1/2*
(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)-8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*t
an(3/4*f*x)+8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/
4*exp(1))^2-8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/
4*f*x)^2+8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*f
*x)^2-8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(
1))+24*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)-
8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*f*x)+8*a*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-8*a*sign
(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-24*a*sign(c
os(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)+8*a*sign(cos(1/
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2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(3/4*f*x)+8*a*sign(cos(1/2*(f*
x+exp(1))-1/4*pi))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-8*a*sign(cos(1/2*(f*x+exp(
1))-1/4*pi))*tan(1/4*f*x)^2*tan(3/4*f*x)-24*a*sign(cos(1/2*(f*x+exp(1))-1/4
*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2+24*a*sign(cos(1/2*(f*x+exp(1))-1/4*
pi))*tan(1/4*exp(1))*tan(1/4*f*x)^2-24*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))
*tan(1/4*exp(1))*tan(3/4*f*x)^2+48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan
(1/4*exp(1))*tan(1/4*f*x)-8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*ex
p(1))*tan(1/4*f*x)^2+8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))
*tan(3/4*f*x)^2-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan
(3/4*f*x)-24*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)*tan(3/4*f*x)
^2-6*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))+6*a*f*x*Si(3/2*f*
x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4
*pi))*im(Ci(1/2*f*x))+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*
f*x))+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))-3*a*f*x*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))+3*a*f*x*sign(cos(1/2*(f*
x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi
))*re(Ci(3/2*f*x))+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*
x))+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))-16*a*sign(c
os(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*
x)^2+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(
1))^2*tan(3/4*f*x)^2+24*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1)
)^2*tan(3/4*exp(1))^2*tan(1/4*f*x)+8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*t
an(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)-16*a*sign(cos(1/2*(f*x+exp(
1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-8*a*sign(cos(1
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4*f*x)^2+8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*e
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))^2*tan(3/4*exp(1))*tan(3/4*f*x)+24*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*t
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-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+8*a*sign(cos(1/2*
(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)-24*a*si
gn(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)*tan(3/4*f*x
)^2+24*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))
^2*tan(1/4*f*x)^2-24*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*t
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(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)+24*a*sign(cos(1/2*(f*x+exp(1))-
1/4*pi))*tan(1/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+48*a*sign(cos(1/2*(f
*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(1/4*f*x)*tan(3/4*f*x)^2+8*a*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-1
6*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3
/4*f*x)+6*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(
1))^2-6*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1)
)^2-6*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2-6
*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*f*x)^2-12*a*f
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*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))+6*a*f*x*S
i(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2-6*a*f*x*Si(
3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2+6*a*f*x*Si(3/
2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2+6*a*f*x*Si(3/2*f*x
)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*f*x)^2-12*a*f*x*Si(3/2*f*x)*si
gn(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))+3*a*f*x*sign(cos(1/2*(f*x+
exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))^2-3*a*f*x*sign(cos(1/2*(f*
x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(3/4*exp(1))^2-3*a*f*x*sign(cos(1/2*(
f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f
*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*
x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))+3*a*f*x*sign(cos(1/2*(f*
x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2-3*a*f*x*sign(cos(1/2*(
f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))^2+3*a*f*x*sign(cos(1/2
*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*f*x)^2+3*a*f*x*sign(cos(1/2*
(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(
f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))-3*a*f*x*sign(cos(1/2*(
f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2+3*a*f*x*sign(cos(1/
2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(3/4*exp(1))^2+3*a*f*x*sign(cos
(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*f*x)^2+3*a*f*x*sign(cos
(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(3/4*f*x)^2+6*a*f*x*sign(cos
(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))-3*a*f*x*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2+3*a*f*x*sign
(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))^2-3*a*f*x*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*f*x)^2-3*a*f*x*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*f*x)^2+6*a*f*x*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))-3*a*f*x*
sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))^2+3*a*f*
x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(3/4*exp(1))^2+3*a*
f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*f*x)^2+3*a*f
*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(3/4*f*x)^2-6*a*f*
x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))+3*a*f*
x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2-3*a*
f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))^2+3*
a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*f*x)^2+3*a
*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*f*x)^2+6*a*
f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))-3*a*
f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))^2+3
*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(3/4*exp(1))^
2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*f*x)^
2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(3/4*f*x)^
2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1
))+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(
1))^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*e
xp(1))^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/
4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/
```

4*f*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/
4*exp(1))-8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*
exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+8*a*sign(cos(1/2*(f*x+exp(1))-1/4*p
i))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)+24*a*si
gn(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/
4*f*x)*tan(3/4*f*x)^2+8*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1)
)^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-16*a*sign(cos(1/2*(f*x+ex
p(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x
)+24*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2
*tan(1/4*f*x)^2*tan(3/4*f*x)^2+48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(
1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)*tan(3/4*f*x)^2+6*a*f*x*Si(1/2*f*
x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+6
*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan
(1/4*f*x)^2+6*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*
exp(1))^2*tan(3/4*f*x)^2-6*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*
pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-6*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x
+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-6*a*f*x*Si(1/2*f*x)*sign
(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-12*a*f*x*Si(1/
2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2
-12*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*ta
n(1/4*f*x)^2-12*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/
4*exp(1))*tan(3/4*f*x)^2-6*a*f*x*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*
pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+6*a*f*x*Si(3/2*f*x)*sign(cos(1/2*(
f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2+6*a*f*x*Si(3/2*f*x)*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2-12*a*f*x
*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*e
xp(1))-6*a*f*x*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1
))^2*tan(1/4*f*x)^2-6*a*f*x*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*
tan(3/4*exp(1))^2*tan(3/4*f*x)^2+6*a*f*x*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(
1))-1/4*pi))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-12*a*f*x*Si(3/2*f*x)*sign(cos(1/
2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2-12*a*f*x*Si(3/2*f*x)
sign(cos(1/2(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(3/4*f*x)^2+3*a*f*x*
sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/
4*exp(1))^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(
1/4*exp(1))^2*tan(1/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(
Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp
(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign
(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(3/4*exp(1))^2*tan(3/4*f*
x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*f*x
)^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x
))*tan(1/4*exp(1))*tan(3/4*exp(1))^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*
pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f
*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*f*x)^2-3*a*f*x*
sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/
4*exp(1))^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(

```
1/4*exp(1))^2*tan(1/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(
Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp
(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))-3*a*f*x*sig
n(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f
*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*ex
p(1))^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2
*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*
pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f
*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))*tan(3/4*f*x)^2-3*a*f*x*
sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3
/4*exp(1))^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*ta
n(1/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*i
m(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+
exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+3*a*f*x*
sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(3/4*exp(1))^2*tan(3
/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1
/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-
1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1
))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)^2+6*a*f*x*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*f*x)^2
+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1)
)^2*tan(3/4*exp(1))^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2
*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1
/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2+6*a*f*x*sign(cos(
1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1)
)+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1
))^2*tan(1/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f
*x))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4
*pi))*im(Ci(-3/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*sign(cos(1/2*(
f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2+6*a*f*
x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))*tan(3
/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/
4*exp(1))^2*tan(3/4*exp(1))^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re
(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+ex
p(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f*x*sig
n(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f
*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(3/4*ex
p(1))^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2
*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*
pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2-6*a*f*x*sign(cos(1/2
*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)^2-6*a*f
*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3
/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/
4*exp(1))^2*tan(3/4*exp(1))^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re
(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+ex
```

p(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2+6*a*f*x*sig
n(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*e
xp(1))-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*e
xp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/
2*f*x))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-
1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*sign(cos(1/2
*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2+6*a*f
*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))*tan(3
/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1
/4*exp(1))^2*tan(3/4*exp(1))^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*r
e(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+
exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f*x*
sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(3/4*exp(1))^2*tan(1
/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(3
/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(C
i(-1/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1)
)-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2-6*a*f*x*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)
^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(
1))*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*
x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1
/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2+3*a*f*x*sign(cos(
1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2
+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1)
)^2*tan(3/4*exp(1))-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f
*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4
*pi))*re(Ci(-3/2*f*x))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/
2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*
f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*exp(1))*tan
(1/4*f*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan
(3/4*exp(1))*tan(3/4*f*x)^2+6*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1
/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+6*a*f*x*Si(1/2*f
*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*
tan(3/4*f*x)^2+6*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1
/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f*x*Si(1/2*f*x)*sign(cos(1/2
*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-12*a
*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4
*exp(1))^2*tan(1/4*f*x)^2-12*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/
4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-12*a*f*x*Si(1/2*f*x
)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(1/4*f*x)^2*tan(3/4
*f*x)^2-6*a*f*x*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(
1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-6*a*f*x*Si(3/2*f*x)*sign(cos(1/2*(f*
x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+6*a*f
*x*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4
*f*x)^2*tan(3/4*f*x)^2-12*a*f*x*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*p

```
i))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2-12*a*f*x*Si(3/2*f*x)*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4
*f*x)^2-6*a*f*x*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(
1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-12*a*f*x*Si(3/2*f*x)*sign(cos(1/2*(f*x+
exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+3*a*f*x*sign
(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*ex
p(1))^2*tan(1/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2
*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(
1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*
tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*t
an(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+ex
p(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*
x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp
(1))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4
*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-3*a*f*x
*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3
/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(C
i(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f*x*sign
(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*
x)^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*
x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2-6*a*f*x*sign(cos(1/2*(
f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(
3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3
/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1)
)-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-3*
a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2
*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi)
)*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-3*a*f
*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*ta
n(1/4*f*x)^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(C
i(-1/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*sign(c
os(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1
))^2*tan(1/4*f*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f
*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+6*a*f*x*sign(cos(1/2*
(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)^2*tan(3
/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1
/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp
(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*
f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*
exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1
/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2+6
*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^
2*tan(3/4*exp(1))*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))
*im(Ci(-3/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))*tan(1/4*
```

f*x)^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*
f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign(cos(1
/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^
2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))
*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+
exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f
*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*ex
p(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/
4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-6*a
*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))*tan
(1/4*f*x)^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci
(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp
(1))^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*
f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*sign(cos(1/2*
(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan
(1/4*f*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(
1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(
1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^
2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1)
)*tan(1/4*f*x)^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*
re(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f*x
sign(cos(1/2(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(
3/4*exp(1))^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(
Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+3*a*f*x*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*
x)^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f
*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-6*a*f*x*sign(cos(1/2*
(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*ta
n(3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*ta
n(1/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1
))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*
x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*ex
p(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-
1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6
*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^
2*tan(3/4*exp(1))*tan(1/4*f*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))
*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)^2-3*a*f*x*
sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*exp(1))^2*tan(1
/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-
3/2*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*Si(1/2*f*x)
sign(cos(1/2(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan
(1/4*f*x)^2*tan(3/4*f*x)^2-12*a*f*x*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1
/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a
*f*x*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3

```
/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-12*a*f*x*Si(3/2*f*x)*sign(cos(1/
2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*ta
n(3/4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan
(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f*x*sign
(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(
1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*p
i))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(
3/4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1
/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos
(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1
))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi
))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/
4*f*x)^2+3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/
4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(
1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi)
)*re(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/
4*f*x)^2-6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4
*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1
/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^
2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*
re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*
x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*ex
p(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f*x*sign(cos(1/
2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*
tan(1/4*f*x)^2*tan(3/4*f*x)^2-3*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re
(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f
*x)^2+6*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*e
xp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2)/(8*sqrt(2)*x*tan(1/
4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+8*sqrt(2)*x*tan
(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+8*sqrt(2)*x*tan(1/4*exp(1))
^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+8*sqrt(2)*x*tan(1/4*exp(1))^2*tan(1/4*f
*x)^2*tan(3/4*f*x)^2+8*sqrt(2)*x*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f
*x)^2+8*sqrt(2)*x*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+8*sqrt(2)*x*tan(1/4*e
xp(1))^2*tan(1/4*f*x)^2+8*sqrt(2)*x*tan(1/4*exp(1))^2*tan(3/4*f*x)^2+8*sqrt
(2)*x*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+8*sqrt(2)*x*tan(3/4*exp(1))^2*tan(3/
4*f*x)^2+8*sqrt(2)*x*tan(1/4*f*x)^2*tan(3/4*f*x)^2+8*sqrt(2)*x*tan(1/4*exp(
1))^2+8*sqrt(2)*x*tan(3/4*exp(1))^2+8*sqrt(2)*x*tan(1/4*f*x)^2+8*sqrt(2)*x*
tan(3/4*f*x)^2+8*sqrt(2)*x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{\left(a + a \sin\left(f x + e\right)\right)^{\frac{3}{2}}}{x^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+a*sin(f*x+e))^(3/2)/x^2,x)
```

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

$$\int \frac{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a*sin(f*x + e) + a)^(3/2)/x^2, x)
```

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

$$\int \frac{\left(a+a\,\sin\left(e+f\,x\right)\right)^{3/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a + a*sin(e + f*x))^(3/2)/x^2, x)
```

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

$$\int \frac{\left(a\left(\sin\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.133 $\int \frac{(a+a\sin(e+fx))^{3/2}}{x^3}\,dx$

Optimal. Leaf size=332

$$-\frac{3}{16}af^2\sin\left(\frac{1}{4}(2e+\pi)\right)\text{Ci}\left(\frac{fx}{2}\right)\csc\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}-\frac{9}{16}af^2\cos\left(\frac{3}{4}(2e-\pi)\right)\text{Ci}\left(\frac{3fx}{2}\right)\csc\left(\right.$$

```
[Out] 9/16*a*f^2*Ci(3/2*f*x)*cos(3/2*e+1/4*Pi)*csc(1/2*e+1/4*Pi+1/2*f*x)*(a+a*sin
(f*x+e))^(1/2)-3/16*a*f^2*cos(1/2*e+1/4*Pi)*csc(1/2*e+1/4*Pi+1/2*f*x)*Si(1/
2*f*x)*(a+a*sin(f*x+e))^(1/2)-9/16*a*f^2*csc(1/2*e+1/4*Pi+1/2*f*x)*Si(3/2*f
*x)*sin(3/2*e+1/4*Pi)*(a+a*sin(f*x+e))^(1/2)-3/16*a*f^2*Ci(1/2*f*x)*csc(1/2
*e+1/4*Pi+1/2*f*x)*sin(1/2*e+1/4*Pi)*(a+a*sin(f*x+e))^(1/2)-3/2*a*f*cos(1/2
*e+1/4*Pi+1/2*f*x)*sin(1/2*e+1/4*Pi+1/2*f*x)*(a+a*sin(f*x+e))^(1/2)/x-a*sin
(1/2*e+1/4*Pi+1/2*f*x)^2*(a+a*sin(f*x+e))^(1/2)/x^2
```

Rubi [A] time = 0.38, antiderivative size = 332, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3319, 3314, 3303, 3299, 3302, 3312}

$$-\frac{3}{16}af^2\sin\left(\frac{1}{4}(2e+\pi)\right)\text{CosIntegral}\left(\frac{fx}{2}\right)\csc\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\sqrt{a\sin(e+fx)+a}-\frac{9}{16}af^2\cos\left(\frac{3}{4}(2e-\pi)\right)\text{Cos}$$

Antiderivative was successfully verified.

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

```
[Out] (-9*a*f^2*Cos[(3*(2*e - Pi))/4]*CosIntegral[(3*f*x)/2]*Csc[e/2 + Pi/4 + (f*
x)/2]*Sqrt[a + a*Sin[e + f*x]])/16 - (3*a*f^2*CosIntegral[(f*x)/2]*Csc[e/2
+ Pi/4 + (f*x)/2]*Sin[(2*e + Pi)/4]*Sqrt[a + a*Sin[e + f*x]])/16 - (3*a*f*C
os[e/2 + Pi/4 + (f*x)/2]*Sin[e/2 + Pi/4 + (f*x)/2]*Sqrt[a + a*Sin[e + f*x]]
)/(2*x) - (a*Sin[e/2 + Pi/4 + (f*x)/2]^2*Sqrt[a + a*Sin[e + f*x]])/x^2 - (3
*a*f^2*Cos[(2*e + Pi)/4]*Csc[e/2 + Pi/4 + (f*x)/2]*Sqrt[a + a*Sin[e + f*x]]
*SinIntegral[(f*x)/2])/16 + (9*a*f^2*Csc[e/2 + Pi/4 + (f*x)/2]*Sin[(3*(2*e
- Pi))/4]*Sqrt[a + a*Sin[e + f*x]]*SinIntegral[(3*f*x)/2])/16
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
```

c*f, 0]

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int \frac{(a+a\sin(e+fx))^{3/2}}{x^3}\,dx = \left(2a\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}\right)\int \frac{\sin^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{x^3}\,dx$$

$$= -\frac{3af\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{2x} - \frac{a\sin^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{f}{2}\right.}{}$$

$$= -\frac{3af\cos\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)}}{2x} - \frac{a\sin^2\left(\frac{e}{2}+\frac{\pi}{4}+\frac{f}{2}\right.}{}$$

$$= \frac{3}{2}af^2\operatorname{Ci}\left(\frac{fx}{2}\right)\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{1}{4}(2e+\pi)\right)\sqrt{a+a\sin(e+fx)} - \frac{3af\cos\left(\right.}{}$$

$$= \frac{3}{2}af^2\operatorname{Ci}\left(\frac{fx}{2}\right)\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sin\left(\frac{1}{4}(2e+\pi)\right)\sqrt{a+a\sin(e+fx)} - \frac{3af\cos\left(\right.}{}$$

$$= -\frac{9}{16}af^2\cos\left(\frac{3}{4}(2e-\pi)\right)\operatorname{Ci}\left(\frac{3fx}{2}\right)\csc\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\sqrt{a+a\sin(e+fx)} - \frac{3}{16}af$$

Mathematica [C] time = 0.91, size = 295, normalized size = 0.89

$$-\frac{i\left(-iae^{-i(e+fx)}\left(e^{i(e+fx)}+i\right)^2\right)^{3/2}\left(3if^2x^2e^{ie+\frac{3ifx}{2}}\operatorname{Ei}\left(-\frac{1}{2}ifx\right)+3f^2x^2e^{2ie+\frac{3ifx}{2}}\operatorname{Ei}\left(\frac{ifx}{2}\right)-9if^2x^2e^{\frac{3}{2}i(2e+fx)}\operatorname{Ei}\left(\frac{3ifx}{2}\right)+\right.}{16\sqrt{2}\,x^2}$$

Antiderivative was successfully verified.

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

```
[Out] ((-1/16*I)*(((-I)*a*(I + E^(I*(e + f*x)))^2)/E^(I*(e + f*x)))^(3/2)*(-4 + (
12*I)*E^(I*(e + f*x)) + 12*E^((2*I)*(e + f*x)) - (4*I)*E^((3*I)*(e + f*x))
+ (6*I)*f*x + 6*E^(I*(e + f*x))*f*x + (6*I)*E^((2*I)*(e + f*x))*f*x + 6*E^(
(3*I)*(e + f*x))*f*x + (3*I)*E^(I*e + ((3*I)/2)*f*x)*f^2*x^2*ExpIntegralEi[
(-1/2*I)*f*x] + 3*E^((2*I)*e + ((3*I)/2)*f*x)*f^2*x^2*ExpIntegralEi[(I/2)*f
*x] - 9*E^(((3*I)/2)*f*x)*f^2*x^2*ExpIntegralEi[((-3*I)/2)*f*x] - (9*I)*E^(
((3*I)/2)*(2*e + f*x))*f^2*x^2*ExpIntegralEi[((3*I)/2)*f*x]))/(Sqrt[2]*(I +
 E^(I*(e + f*x)))^3*x^2)
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

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

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Unabl
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2*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2-32*a*sign(cos(1/2*(f*
x+exp(1))-1/4*pi))*tan(3/4*f*x)^2-48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*t
an(1/4*exp(1))-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))-48*a
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(1))-1/4*pi))*tan(3/4*f*x)-24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))+16*a
*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2-16*
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a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))+48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*f*x)+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(3/4*f*x)+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2*tan(3/4*f*x)-48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2+48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(1/4*f*x)^2-48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*f*x)^2+96*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(1/4*f*x)-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(3/4*f*x)^2-32*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(3/4*f*x)-48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)*tan(3/4*f*x)^2+24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))-24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))+24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)-24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*f*x)-6*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))-18*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))-32*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+32*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)-32*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)^2-32*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)+48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)*tan(3/4*f*x)^2+32*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)-48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)*tan(3/4*f*x)^2+48*a*sign(cos(1/2*(f

```
*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-48*a*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(3/4
*f*x)^2+96*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp
(1))^2*tan(1/4*f*x)+48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))
*tan(1/4*f*x)^2*tan(3/4*f*x)^2+96*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(
1/4*exp(1))*tan(1/4*f*x)*tan(3/4*f*x)^2+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*
pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-32*a*sign(cos(1/2*(f*x+e
xp(1))-1/4*pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)+24*a*f*x*sign(c
os(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2-24*a*f*x*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2+24*a*f*x
*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2-24*a*f
*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))-24*
a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)-24*
a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*f*x)+24*
a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-2
4*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2
+24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)
+24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(3/4*f*x)
+24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-
24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2*tan(3/4*f*x)+24*
a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2-
24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(1/4*f*x)^2+
24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*f*x)^2+
48*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(1/4*f*x)-24
*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2+24
*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(3/4*f*x)^2+48
*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(3/4*f*x)+24*a
*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)*tan(3/4*f*x)^2+6*a*f^2
*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2-6*a*f
^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2-6*a
*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2-6*a*
f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*f*x)^2+12*a*
f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))-18*a
*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2+1
8*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^
2-18*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^
2-18*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*f*x)^
2-36*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1
))+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*e
xp(1))^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan
(3/4*exp(1))^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x
))*tan(1/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*
f*x))*tan(3/4*f*x)^2+6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1
/2*f*x))*tan(1/4*exp(1))-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(
Ci(3/2*f*x))*tan(1/4*exp(1))^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi
```

))*im(Ci(3/2*f*x))*tan(3/4*exp(1))^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(3/4*exp(1))^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(3/4*f*x)^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*f*x)^2+18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(3/4*exp(1))^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(3/4*f*x)^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(3/4*exp(1))^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(3/4*f*x)^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*exp(1))^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*exp(1))-16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)+48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)*tan(3/4*f*x)^2+16*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-32*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)+48*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+96*a*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2

```
*tan(1/4*f*x)*tan(3/4*f*x)^2-24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*ta
n(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)+24*a*f*x*sign(cos(1/2*(f*x+e
xp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)-24*a*f*x*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*
f*x)-24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*
exp(1))*tan(1/4*f*x)^2+24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*
exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)^2+48*a*f*x*sign(cos(1/2*(f*x+exp(1))
-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)-24*a*f*x*sign(cos(
1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)*tan(3/4*f*x)^2+24*
a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*t
an(3/4*f*x)+24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*t
an(1/4*f*x)*tan(3/4*f*x)^2-24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(
1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+24*a*f*x*sign(cos(1/2*(f*x+exp
(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+48*a*f*x*sig
n(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f
*x)-24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(1/4*f*x
)^2*tan(3/4*f*x)^2+48*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(
1))*tan(1/4*f*x)*tan(3/4*f*x)^2+24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))
*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+48*a*f*x*sign(cos(1/2*(f*x+e
xp(1))-1/4*pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)+6*a*f^2*x^2*Si(
1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1
))^2+6*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp
(1))^2*tan(1/4*f*x)^2+6*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4
*pi))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2-6*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2
*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-6*a*f^2*x^2*Si(1/2*
f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-6*
a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*f*x)^2*tan
(3/4*f*x)^2+12*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan
(1/4*exp(1))*tan(3/4*exp(1))^2+12*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+e
xp(1))-1/4*pi))*tan(1/4*exp(1))*tan(1/4*f*x)^2+12*a*f^2*x^2*Si(1/2*f*x)*sig
n(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*f*x)^2+18*a*f^2*x^2
*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*e
xp(1))^2-18*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/
4*exp(1))^2*tan(1/4*f*x)^2-18*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1
))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2-36*a*f^2*x^2*Si(3/2*f*x)*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))+18*a*f^2*x^
2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*
f*x)^2+18*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*
exp(1))^2*tan(3/4*f*x)^2-18*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))
-1/4*pi))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-36*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1
/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2-36*a*f^2*x^2*Si(3/2
*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))*tan(3/4*f*x)^2+3*a
*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))
^2*tan(3/4*exp(1))^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1
/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp
```

(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2-3*a*f^2*x^2*
sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(3/4*exp(1))^2*tan(1/
4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan
(3/4*exp(1))^2*tan(3/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi)
)*im(Ci(1/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f^2*x^2*sign(cos(1/2*(f
*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2+6*a*f
^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))*t
an(1/4*f*x)^2+6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x)
)*tan(1/4*exp(1))*tan(3/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*
pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2-9*a*f^2*x^2*sign(c
os(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)
^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*e
xp(1))^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(
Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))+9*a*f^2*x^2*sign(cos(1/2*(f*
x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+9*a*f^2
*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))^2*t
an(3/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x)
)*tan(1/4*f*x)^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*
pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2-18*a*f^2*x^2*sign(cos(1
/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))*tan(3/4*f*x)^2-3*a
*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1)
)^2*tan(3/4*exp(1))^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(
-1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+e
xp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f^2*x
^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(3/4*exp(1))^2*ta
n(1/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x)
)*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/
4*pi))*im(Ci(-1/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f^2*x^2*sign(cos(
1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^
2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*e
xp(1))*tan(1/4*f*x)^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(
-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp
(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+9*a*f^2*
x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*t
an(1/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x
))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2+18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-
1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))-9*a*f^2*x^2*sig
n(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*
f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(
3/4*exp(1))^2*tan(3/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))
*im(Ci(-3/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+18*a*f^2*x^2*sign(cos(1/2*(
f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2+18*a*f
^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))*
tan(3/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x
))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1)

```
)-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2+3*a*f^2*x^2*sig
n(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f
*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(3/
4*exp(1))^2*tan(1/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*r
e(Ci(1/2*f*x))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f
*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f^2*x
^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3
/4*exp(1))^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))
*tan(1/4*exp(1))*tan(1/4*f*x)^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*p
i))*re(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2
*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+
9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(
1))^2*tan(1/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3
/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+ex
p(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))-9*a*f^2*x^
2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))^2*tan(
1/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*t
an(3/4*exp(1))^2*tan(3/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*p
i))*re(Ci(3/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2
*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2-18*a*
f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))*
tan(3/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*
x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1
))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2+3*a*f^2*x^2*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/
4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*ta
n(3/4*exp(1))^2*tan(1/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi
))*re(Ci(-1/2*f*x))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-3*a*f^2*x^2*sign(cos(1
/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a
*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1)
)*tan(3/4*exp(1))^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1
/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1
))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*f*x)^2-9*a*f^2*x^2*sig
n(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*
exp(1))^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*t
an(1/4*exp(1))^2*tan(1/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*p
i))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos
(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1
))-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*
exp(1))^2*tan(1/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(
Ci(-3/2*f*x))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*
x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-18*a*f^2*
x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*exp(1))*tan
(1/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x)
)*tan(3/4*exp(1))*tan(3/4*f*x)^2-24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi)
```

```
)*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+24*a*f*
x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*ta
n(1/4*f*x)^2*tan(3/4*f*x)-24*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1
/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)*tan(3/4*f*x)^2+24*a*f*x*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^
2*tan(3/4*f*x)^2+48*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1)
)^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)-24*a*f*x*sign(cos(1/2*(f*x+
exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f
*x)^2+48*a*f*x*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*e
xp(1))^2*tan(1/4*f*x)*tan(3/4*f*x)^2+6*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(
f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+6*a
*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*t
an(3/4*exp(1))^2*tan(3/4*f*x)^2+6*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+e
xp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f^2*x^2
*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(1/4*f
*x)^2*tan(3/4*f*x)^2+12*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4
*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+12*a*f^2*x^2*Si(1/2*
f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*t
an(3/4*f*x)^2+12*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*t
an(1/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+18*a*f^2*x^2*Si(3/2*f*x)*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f
*x)^2+18*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*e
xp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-18*a*f^2*x^2*Si(3/2*f*x)*sign(cos
(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-
36*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))
^2*tan(3/4*exp(1))*tan(1/4*f*x)^2-36*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*
x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)^2+18*a*f^
2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(3/4*exp(1))^2*tan(
1/4*f*x)^2*tan(3/4*f*x)^2-36*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1)
)-1/4*pi))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+3*a*f^2*x^2*sign(c
os(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(
1))^2*tan(1/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1
/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f^2*x^2*sig
n(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f
*x)^2*tan(3/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1
/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f^2*x^2*sign(c
os(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1)
)^2*tan(1/4*f*x)^2+6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2
*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+6*a*f^2*x^2*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)^2*
tan(3/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x
))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+9*a*f^2*x^2*sign(cos(
1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))
^2*tan(3/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*
f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos
```

(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1)
)*tan(1/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*
f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)^2+9*a*f^2*x^2*sign(cos
(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2
*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f
*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2
*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2
*tan(1/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f
*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-3*a*f^2*x^2*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)
^2*tan(3/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2
*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f^2*x^2*sign(cos
(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))
^2*tan(1/4*f*x)^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2
*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-6*a*f^2*x^2*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)^2
*tan(3/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f
*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-9*a*f^2*x^2*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(
1))^2*tan(3/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-
3/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+18*a*f^2*x^2*sign
(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*e
xp(1))*tan(1/4*f*x)^2+18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci
(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)^2-9*a*f^2*x^2*si
gn(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(3/4*exp(1))^2*tan(1/4
*f*x)^2*tan(3/4*f*x)^2+18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(C
i(-3/2*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+3*a*f^2*x^2*sign
(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*ex
p(1))^2*tan(1/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci
(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f^2*x^2*s
ign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4
*f*x)^2*tan(3/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci
(1/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f^2*x^2*sign
(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(
1))^2*tan(1/4*f*x)^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1
/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-6*a*f^2*x^2*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)^
2*tan(3/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f
*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-9*a*f^2*x^2*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1
))^2*tan(3/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/
2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(c
os(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(
1))*tan(1/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/
2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)^2-9*a*f^2*x^2*sign(c

os(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)
^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(3/2
*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+3*a*f^2*x^2*sign(cos(1
/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))
^2*tan(1/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2
*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+3*a*f^2*x^2*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*
x)^2*tan(3/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1
/2*f*x))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f^2*x^2*sign(c
os(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1
))^2*tan(1/4*f*x)^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1
/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(3/4*f*x)^2-6*a*f^2*x^2*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(1/4*f*x)
^2*tan(3/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2
*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2-9*a*f^2*x^2*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*ex
p(1))^2*tan(3/4*f*x)^2+9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci
(-3/2*f*x))*tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-18*a*f^2*x^2*si
gn(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4
*exp(1))*tan(1/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(
Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(3/4*f*x)^2-9*a*f^2*x^2*
sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*f*x))*tan(3/4*exp(1))^2*tan(1
/4*f*x)^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re
(Ci(-3/2*f*x))*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+6*a*f^2*x^2*Si
(1/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp(
1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+12*a*f^2*x^2*Si(1/2*f*x)*sign(cos(1/2*(
f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3
/4*f*x)^2+18*a*f^2*x^2*Si(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1
/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-36*a*f^2*x^2*S
i(3/2*f*x)*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*tan(1/4*exp(1))^2*tan(3/4*exp
(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/
4*pi))*im(Ci(1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*t
an(3/4*f*x)^2+6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(1/2*f*x)
)*tan(1/4*exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+9*a*f^2*x
^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan
(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x
+exp(1))-1/4*pi))*im(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4
*f*x)^2*tan(3/4*f*x)^2-3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci
(-1/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)
^2-6*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-1/2*f*x))*tan(1/4*
exp(1))*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-9*a*f^2*x^2*sign(co
s(1/2*(f*x+exp(1))-1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(
1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-
1/4*pi))*im(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*
tan(3/4*f*x)^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x

```
))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f^
2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(1/2*f*x))*tan(1/4*exp(1))*ta
n(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x
+exp(1))-1/4*pi))*re(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1
/4*f*x)^2*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re
(Ci(3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)
^2+3*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*
exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-6*a*f^2*x^2*sign(
cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-1/2*f*x))*tan(1/4*exp(1))*tan(3/4*exp(
1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2-9*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1
/4*pi))*re(Ci(-3/2*f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2
*tan(3/4*f*x)^2-18*a*f^2*x^2*sign(cos(1/2*(f*x+exp(1))-1/4*pi))*re(Ci(-3/2*
f*x))*tan(1/4*exp(1))^2*tan(3/4*exp(1))*tan(1/4*f*x)^2*tan(3/4*f*x)^2)/(32*
sqrt(2)*x^2*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)
^2+32*sqrt(2)*x^2*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(1/4*f*x)^2+32*sqr
t(2)*x^2*tan(1/4*exp(1))^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+32*sqrt(2)*x^2*
tan(1/4*exp(1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+32*sqrt(2)*x^2*tan(3/4*exp(
1))^2*tan(1/4*f*x)^2*tan(3/4*f*x)^2+32*sqrt(2)*x^2*tan(1/4*exp(1))^2*tan(3/
4*exp(1))^2+32*sqrt(2)*x^2*tan(1/4*exp(1))^2*tan(1/4*f*x)^2+32*sqrt(2)*x^2*
tan(1/4*exp(1))^2*tan(3/4*f*x)^2+32*sqrt(2)*x^2*tan(3/4*exp(1))^2*tan(1/4*f
*x)^2+32*sqrt(2)*x^2*tan(3/4*exp(1))^2*tan(3/4*f*x)^2+32*sqrt(2)*x^2*tan(1/
4*f*x)^2*tan(3/4*f*x)^2+32*sqrt(2)*x^2*tan(1/4*exp(1))^2+32*sqrt(2)*x^2*tan
(3/4*exp(1))^2+32*sqrt(2)*x^2*tan(1/4*f*x)^2+32*sqrt(2)*x^2*tan(3/4*f*x)^2+
32*sqrt(2)*x^2)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{\left(a + a\sin\left(fx + e\right)\right)^{\frac{3}{2}}}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((a+a*sin(f*x+e))^(3/2)/x^3,x)
```

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

$$\int \frac{\left(a\sin\left(fx + e\right) + a\right)^{\frac{3}{2}}}{x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((a*sin(f*x + e) + a)^(3/2)/x^3, x)
```

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

$$\int \frac{\left(a + a\,\sin\left(e + f\,x\right)\right)^{3/2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(e + f*x))^(3/2)/x^3,x)
[Out] int((a + a*sin(e + f*x))^(3/2)/x^3, x)
```

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

$$\int \frac{\left(a\left(\sin\left(e + fx\right) + 1\right)\right)^{\frac{3}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(f*x+e))**(3/2)/x**3,x)
[Out] Integral((a*(sin(e + f*x) + 1))**(3/2)/x**3, x)
```

3.134 $\int \frac{x^3}{\sqrt{a+a\sin(c+dx)}}\,dx$

Optimal. Leaf size=417

$$-\frac{96i\text{Li}_4\left(-e^{\frac{1}{4}i(2c+2dx+\pi)}\right)\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{d^4\sqrt{a\sin(c+dx)+a}}+\frac{96i\text{Li}_4\left(e^{\frac{1}{4}i(2c+2dx+\pi)}\right)\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{d^4\sqrt{a\sin(c+dx)+a}}-\frac{48x\text{Li}_3\left(-e^{\frac{1}{4}i(2c+2dx+\pi)}\right)\sin\left(\frac{c}{2}\right.}{d^3\sqrt{a\sin(c+dx)+}}$$

```
[Out] -4*x^3*arctanh(exp(1/4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+1/4*Pi+1/2*d*x)/d/(a+a*
sin(d*x+c))^(1/2)+12*I*x^2*polylog(2,-exp(1/4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+
1/4*Pi+1/2*d*x)/d^2/(a+a*sin(d*x+c))^(1/2)-12*I*x^2*polylog(2,exp(1/4*I*(2*
d*x+Pi+2*c)))*sin(1/2*c+1/4*Pi+1/2*d*x)/d^2/(a+a*sin(d*x+c))^(1/2)-48*x*pol
ylog(3,-exp(1/4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+1/4*Pi+1/2*d*x)/d^3/(a+a*sin(d
*x+c))^(1/2)+48*x*polylog(3,exp(1/4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+1/4*Pi+1/2
*d*x)/d^3/(a+a*sin(d*x+c))^(1/2)-96*I*polylog(4,-exp(1/4*I*(2*d*x+Pi+2*c)))
*sin(1/2*c+1/4*Pi+1/2*d*x)/d^4/(a+a*sin(d*x+c))^(1/2)+96*I*polylog(4,exp(1/
4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+1/4*Pi+1/2*d*x)/d^4/(a+a*sin(d*x+c))^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 417, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {3319, 4183, 2531, 6609, 2282, 6589}

$$\frac{12ix^2\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{1}{4}i(2c+2dx+\pi)}\right)}{d^2\sqrt{a\sin(c+dx)+a}}-\frac{12ix^2\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{1}{4}i(2c+2dx+\pi)}\right)}{d^2\sqrt{a\sin(c+dx)+a}}-\frac{48x\sin\left(\frac{c}{2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3/Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] (-4*x^3*ArcTanh[E^((I/4)*(2*c + Pi + 2*d*x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d
*Sqrt[a + a*Sin[c + d*x]]) + ((12*I)*x^2*PolyLog[2, -E^((I/4)*(2*c + Pi + 2
*d*x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d^2*Sqrt[a + a*Sin[c + d*x]]) - ((12*I)
*x^2*PolyLog[2, E^((I/4)*(2*c + Pi + 2*d*x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d
^2*Sqrt[a + a*Sin[c + d*x]]) - (48*x*PolyLog[3, -E^((I/4)*(2*c + Pi + 2*d*x
))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d^3*Sqrt[a + a*Sin[c + d*x]]) + (48*x*PolyL
og[3, E^((I/4)*(2*c + Pi + 2*d*x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d^3*Sqrt[a
+ a*Sin[c + d*x]]) - ((96*I)*PolyLog[4, -E^((I/4)*(2*c + Pi + 2*d*x))]*Sin[
c/2 + Pi/4 + (d*x)/2])/(d^4*Sqrt[a + a*Sin[c + d*x]]) + ((96*I)*PolyLog[4,
E^((I/4)*(2*c + Pi + 2*d*x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d^4*Sqrt[a + a*Si
n[c + d*x]])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
```

```
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^3}{\sqrt{a+a\sin(c+dx)}}\,dx = \frac{\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\int x^3\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)dx}{\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x^3\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} - \frac{\left(6\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\right)\int x^2\log\left(1-e^{i(}\right.}{d\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x^3\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} + \frac{12ix^2\text{Li}_2\left(-e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}\right.}{d^2\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x^3\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} + \frac{12ix^2\text{Li}_2\left(-e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}\right.}{d^2\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x^3\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} + \frac{12ix^2\text{Li}_2\left(-e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}\right.}{d^2\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x^3\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} + \frac{12ix^2\text{Li}_2\left(-e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}\right.}{d^2\sqrt{a+a\sin(c+dx)}}$$

Mathematica [A] time = 0.88, size = 306, normalized size = 0.73

$$\frac{\sqrt[4]{-1}\sqrt{2}e^{-\frac{1}{2}i(c+dx)}\left(e^{i(c+dx)}+i\right)\left(-id^3x^3\log\left(1-\sqrt[4]{-1}e^{\frac{1}{2}i(c+dx)}\right)+id^3x^3\log\left(1+\sqrt[4]{-1}e^{\frac{1}{2}i(c+dx)}\right)+6d^2x^2\text{Li}_2\left(-\sqrt[4]{-1}e\right.\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3/Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] ((-1)^(1/4)*Sqrt[2]*(I + E^(I*(c + d*x)))*((-I)*d^3*x^3*Log[1 - (-1)^(1/4)*
E^((I/2)*(c + d*x))] + I*d^3*x^3*Log[1 + (-1)^(1/4)*E^((I/2)*(c + d*x))] +
6*d^2*x^2*PolyLog[2, -((-1)^(1/4)*E^((I/2)*(c + d*x)))] - 6*d^2*x^2*PolyLog
[2, (-1)^(1/4)*E^((I/2)*(c + d*x))] + (24*I)*d*x*PolyLog[3, -((-1)^(1/4)*E^
((I/2)*(c + d*x)))] - (24*I)*d*x*PolyLog[3, (-1)^(1/4)*E^((I/2)*(c + d*x))]
 - 48*PolyLog[4, -((-1)^(1/4)*E^((I/2)*(c + d*x)))] + 48*PolyLog[4, (-1)^(1
/4)*E^((I/2)*(c + d*x))]))/(d^4*E^((I/2)*(c + d*x))*Sqrt[((-I)*a*(I + E^(I*
(c + d*x)))^2)/E^(I*(c + d*x))])
```

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

$$\text{integral}\left(\frac{x^3}{\sqrt{a\sin\left(dx+c\right)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+a*sin(d*x+c))^(1/2),x, algorithm="fricas")
[Out] integral(x^3/sqrt(a*sin(d*x + c) + a), x)
```

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

$$\int\frac{x^3}{\sqrt{a\sin\left(dx+c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+a*sin(d*x+c))^(1/2),x, algorithm="giac")
[Out] integrate(x^3/sqrt(a*sin(d*x + c) + a), x)
```

maple [F] time = 0.24, size = 0, normalized size = 0.00

$$\int\frac{x^3}{\sqrt{a+a\sin\left(dx+c\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a+a*sin(d*x+c))^(1/2),x)
[Out] int(x^3/(a+a*sin(d*x+c))^(1/2),x)
```

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

$$\int\frac{x^3}{\sqrt{a\sin\left(dx+c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+a*sin(d*x+c))^(1/2),x, algorithm="maxima")
[Out] integrate(x^3/sqrt(a*sin(d*x + c) + a), x)
```

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

$$\int\frac{x^3}{\sqrt{a+a\,\sin\left(c+d\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a + a*sin(c + d*x))^(1/2),x)
```

```
[Out] int(x^3/(a + a*sin(c + d*x))^(1/2), x)
```

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

$$\int \frac{x^3}{\sqrt{a(\sin(c+dx)+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/(a+a*sin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x**3/sqrt(a*(sin(c + d*x) + 1)), x)
```

3.135 $\int \frac{x^2}{\sqrt{a+a\sin(c+dx)}}\,dx$

Optimal. Leaf size=293

$$-\frac{16\text{Li}_3\left(-e^{\frac{1}{4}i(2c+2dx+\pi)}\right)\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{d^3\sqrt{a\sin(c+dx)+a}}+\frac{16\text{Li}_3\left(e^{\frac{1}{4}i(2c+2dx+\pi)}\right)\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{d^3\sqrt{a\sin(c+dx)+a}}+\frac{8ix\text{Li}_2\left(-e^{\frac{1}{4}i(2c+2dx+\pi)}\right)\sin\left(\frac{c}{2}\right.}{d^2\sqrt{a\sin(c+dx)+}}$$

```
[Out] -4*x^2*arctanh(exp(1/4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+1/4*Pi+1/2*d*x)/d/(a+a*
sin(d*x+c))^(1/2)+8*I*x*polylog(2,-exp(1/4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+1/4
*Pi+1/2*d*x)/d^2/(a+a*sin(d*x+c))^(1/2)-8*I*x*polylog(2,exp(1/4*I*(2*d*x+Pi
+2*c)))*sin(1/2*c+1/4*Pi+1/2*d*x)/d^2/(a+a*sin(d*x+c))^(1/2)-16*polylog(3,-
exp(1/4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+1/4*Pi+1/2*d*x)/d^3/(a+a*sin(d*x+c))^(
1/2)+16*polylog(3,exp(1/4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+1/4*Pi+1/2*d*x)/d^3/
(a+a*sin(d*x+c))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 293, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3319, 4183, 2531, 2282, 6589}

$$\frac{8ix\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{1}{4}i(2c+2dx+\pi)}\right)}{d^2\sqrt{a\sin(c+dx)+a}}-\frac{8ix\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{1}{4}i(2c+2dx+\pi)}\right)}{d^2\sqrt{a\sin(c+dx)+a}}-\frac{16\sin\left(\frac{c}{2}+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] (-4*x^2*ArcTanh[E^((I/4)*(2*c + Pi + 2*d*x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d
*Sqrt[a + a*Sin[c + d*x]]) + ((8*I)*x*PolyLog[2, -E^((I/4)*(2*c + Pi + 2*d*
x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d^2*Sqrt[a + a*Sin[c + d*x]]) - ((8*I)*x*P
olyLog[2, E^((I/4)*(2*c + Pi + 2*d*x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d^2*Sqr
t[a + a*Sin[c + d*x]]) - (16*PolyLog[3, -E^((I/4)*(2*c + Pi + 2*d*x))]*Sin[
c/2 + Pi/4 + (d*x)/2])/(d^3*Sqrt[a + a*Sin[c + d*x]]) + (16*PolyLog[3, E^((
I/4)*(2*c + Pi + 2*d*x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d^3*Sqrt[a + a*Sin[c
+ d*x]])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2}{\sqrt{a+a\sin(c+dx)}}\,dx = \frac{\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\int x^2\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)dx}{\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x^2\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} - \frac{\left(4\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\right)\int x\log\left(1-e^{i(}\right.}{d\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x^2\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} + \frac{8ix\text{Li}_2\left(-e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\right.}{d^2\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x^2\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} + \frac{8ix\text{Li}_2\left(-e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\right.}{d^2\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x^2\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} + \frac{8ix\text{Li}_2\left(-e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\right.}{d^2\sqrt{a+a\sin(c+dx)}}$$

Mathematica [A] time = 0.62, size = 245, normalized size = 0.84

$$\frac{\sqrt[4]{-1}\sqrt{2}e^{-\frac{1}{2}i(c+dx)}\left(e^{i(c+dx)}+i\right)\left(4dx\text{Li}_2\left(-\sqrt[4]{-1}e^{\frac{1}{2}i(c+dx)}\right)-i\left(d^2x^2\log\left(1-\sqrt[4]{-1}e^{\frac{1}{2}i(c+dx)}\right)-d^2x^2\log\left(1+\sqrt[4]{-1}e^{\frac{1}{2}}\right.\right.\right.}{d^3\sqrt{-iae^{-i(c+dx)}\left(e^{i(c+dx)}+i\right)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] ((-1)^(1/4)*Sqrt[2]*(I + E^(I*(c + d*x)))*(4*d*x*PolyLog[2, -((-1)^(1/4)*E^
((I/2)*(c + d*x)))] - I*(d^2*x^2*Log[1 - (-1)^(1/4)*E^((I/2)*(c + d*x))] -
d^2*x^2*Log[1 + (-1)^(1/4)*E^((I/2)*(c + d*x))] - (4*I)*d*x*PolyLog[2, (-1)
^(1/4)*E^((I/2)*(c + d*x))] - 8*PolyLog[3, -((-1)^(1/4)*E^((I/2)*(c + d*x))
)] + 8*PolyLog[3, (-1)^(1/4)*E^((I/2)*(c + d*x))])))/(d^3*E^((I/2)*(c + d*x
))*Sqrt[((-I)*a*(I + E^(I*(c + d*x)))^2)/E^(I*(c + d*x))])
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^2}{\sqrt{a\sin(dx+c)+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+a*sin(d*x+c))^(1/2),x, algorithm="fricas")
[Out] integral(x^2/sqrt(a*sin(d*x + c) + a), x)
```

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

$$\int \frac{x^2}{\sqrt{a\sin(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+a*sin(d*x+c))^(1/2),x, algorithm="giac")
[Out] integrate(x^2/sqrt(a*sin(d*x + c) + a), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{a+a\sin(dx+c)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{x^2}{\sqrt{a\sin(dx+c)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+a*sin(d*x+c))^(1/2),x, algorithm="maxima")
[Out] integrate(x^2/sqrt(a*sin(d*x + c) + a), x)
```

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

$$\int \frac{x^2}{\sqrt{a+a\,\sin(c+d\,x)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

<u>**sympy**</u> **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\sqrt{a\left(\sin\left(c+dx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(a+a*sin(d*x+c))**(1/2),x)
```

```
[Out] Integral(x**2/sqrt(a*(sin(c + d*x) + 1)), x)
```

3.136 $\int \frac{x}{\sqrt{a+a\sin(c+dx)}}\,dx$

Optimal. Leaf size=175

$$\frac{4i\text{Li}_2\left(-e^{\frac{1}{4}i(2c+2dx+\pi)}\right)\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{d^2\sqrt{a\sin(c+dx)+a}}-\frac{4i\text{Li}_2\left(e^{\frac{1}{4}i(2c+2dx+\pi)}\right)\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{d^2\sqrt{a\sin(c+dx)+a}}-\frac{4x\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\tanh^{-1}\left(e^{\frac{1}{4}i(2c\right.}}{d\sqrt{a\sin(c+dx)+a}}$$

```
[Out] -4*x*arctanh(exp(1/4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+1/4*Pi+1/2*d*x)/d/(a+a*si
n(d*x+c))^(1/2)+4*I*polylog(2,-exp(1/4*I*(2*d*x+Pi+2*c)))*sin(1/2*c+1/4*Pi+
1/2*d*x)/d^2/(a+a*sin(d*x+c))^(1/2)-4*I*polylog(2,exp(1/4*I*(2*d*x+Pi+2*c))
)*sin(1/2*c+1/4*Pi+1/2*d*x)/d^2/(a+a*sin(d*x+c))^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3319, 4183, 2279, 2391}

$$\frac{4i\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{1}{4}i(2c+2dx+\pi)}\right)}{d^2\sqrt{a\sin(c+dx)+a}}-\frac{4i\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{1}{4}i(2c+2dx+\pi)}\right)}{d^2\sqrt{a\sin(c+dx)+a}}-\frac{4x\sin\left(\frac{c}{2}+\frac{dx}{2}+\right.}{d\sqrt{a\,\text{s}}}$$

Antiderivative was successfully verified.

```
[In] Int[x/Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] (-4*x*ArcTanh[E^((I/4)*(2*c + Pi + 2*d*x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d*S
qrt[a + a*Sin[c + d*x]]) + ((4*I)*PolyLog[2, -E^((I/4)*(2*c + Pi + 2*d*x))]
*Sin[c/2 + Pi/4 + (d*x)/2])/(d^2*Sqrt[a + a*Sin[c + d*x]]) - ((4*I)*PolyLog
[2, E^((I/4)*(2*c + Pi + 2*d*x))]*Sin[c/2 + Pi/4 + (d*x)/2])/(d^2*Sqrt[a +
a*Sin[c + d*x]])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

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

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
```

```
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rubi steps

$$\int \frac{x}{\sqrt{a+a\sin(c+dx)}}\,dx = \frac{\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\int x\csc\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)dx}{\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} - \frac{\left(2\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\right)\int \log\left(1-e^{i\left(\frac{c}{2}+\right.}\right.}{d\sqrt{a+a\sin(c+dx)}}$$

$$= -\frac{4x\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} + \frac{\left(4i\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\right)\text{Subst}\left(\int \frac{\log(1-}{x}\right.}{d^2\sqrt{a+a\sin(c+d}}$$

$$= -\frac{4x\tanh^{-1}\left(e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{d\sqrt{a+a\sin(c+dx)}} + \frac{4i\text{Li}_2\left(-e^{\frac{1}{4}i(2c+\pi+2dx)}\right)\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{d}{}\right.}{d^2\sqrt{a+a\sin(c+dx)}}$$

Mathematica [A] time = 1.63, size = 231, normalized size = 1.32

$$\frac{2\left(\frac{c\sin\left(\frac{1}{4}(2c+2dx-\pi)\right)\sin^{-1}\left(\csc\left(\frac{1}{4}(2c+2dx+\pi)\right)\right)}{\sqrt{\frac{\sin(c+dx)-1}{\sin(c+dx)+1}}} + \frac{\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)\left(2i\left(\text{Li}_2\left(-e^{\frac{1}{4}i(2c+2dx+\pi)}\right)-\text{Li}_2\left(e^{\frac{1}{4}i(2c+2dx+\pi)}\right)\right)+\frac{1}{2}(2c+2dx+\pi)\right.}{\sqrt{2}}\right.}{d^2\sqrt{a(\sin(c+dx)+1)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/Sqrt[a + a*Sin[c + d*x]],x]
```

```
[Out] (2*(((-(Pi*ArcTanh[(-1 + Tan[(c + d*x)/4])/Sqrt[2]]) + ((2*c + Pi + 2*d*x)*
(Log[1 - E^((I/4)*(2*c + Pi + 2*d*x))] - Log[1 + E^((I/4)*(2*c + Pi + 2*d*x
```

```
))]))/2 + (2*I)*(PolyLog[2, -E^((I/4)*(2*c + Pi + 2*d*x))] - PolyLog[2, E^(
(I/4)*(2*c + Pi + 2*d*x))]))*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]))/Sqrt[2]
 + (c*ArcSin[Csc[(2*c + Pi + 2*d*x)/4]]*Sin[(2*c - Pi + 2*d*x)/4])/Sqrt[(-1
 + Sin[c + d*x])/(1 + Sin[c + d*x])]))/(d^2*Sqrt[a*(1 + Sin[c + d*x])])
```

fricas [F] time = 0.71, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x}{\sqrt{a\sin\left(dx+c\right)+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+a*sin(d*x+c))^(1/2),x, algorithm="fricas")
[Out] integral(x/sqrt(a*sin(d*x + c) + a), x)
```

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

$$\int \frac{x}{\sqrt{a\sin\left(dx+c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+a*sin(d*x+c))^(1/2),x, algorithm="giac")
[Out] integrate(x/sqrt(a*sin(d*x + c) + a), x)
```

maple [F] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{x}{\sqrt{a+a\sin\left(dx+c\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{x}{\sqrt{a\sin\left(dx+c\right)+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+a*sin(d*x+c))^(1/2),x, algorithm="maxima")
[Out] integrate(x/sqrt(a*sin(d*x + c) + a), x)
```

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

$$\int \frac{x}{\sqrt{a+a\,\sin\left(c+d\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{x}{\sqrt{a\left(\sin\left(c+dx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+a*sin(d*x+c))**(1/2),x)
[Out] Integral(x/sqrt(a*(sin(c + d*x) + 1)), x)
```

3.137 $\int \frac{1}{x\sqrt{a+a\sin(c+dx)}}\,dx$

Optimal. Leaf size=21

$$\text{Int}\left(\frac{1}{x\sqrt{a\sin(c+dx)+a}},x\right)$$

```
[Out] Unintegrable(1/x/(a+a*sin(d*x+c))^(1/2),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x\sqrt{a+a\sin(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*Sqrt[a + a*Sin[c + d*x]]),x]
[Out] Defer[Int][1/(x*Sqrt[a + a*Sin[c + d*x]]), x]
```

Rubi steps

$$\int \frac{1}{x\sqrt{a+a\sin(c+dx)}}\,dx=\int \frac{1}{x\sqrt{a+a\sin(c+dx)}}\,dx$$

Mathematica [A] time = 3.25, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{a+a\sin(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*Sqrt[a + a*Sin[c + d*x]]),x]
[Out] Integrate[1/(x*Sqrt[a + a*Sin[c + d*x]]), x]
```

fricas [A] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sin(dx+c)+a}}{ax\sin(dx+c)+ax},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+a*sin(d*x+c))^(1/2),x, algorithm="fricas")
[Out] integral(sqrt(a*sin(d*x + c) + a)/(a*x*sin(d*x + c) + a*x), x)
```

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

$$\int \frac{1}{\sqrt{a\sin\left(dx+c\right)+a}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+a*sin(d*x+c))^(1/2),x, algorithm="giac")
[Out] integrate(1/(sqrt(a*sin(d*x + c) + a)*x), x)
```

maple [A] time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{1}{x\sqrt{a+a\sin\left(dx+c\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{1}{\sqrt{a\sin\left(dx+c\right)+a}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+a*sin(d*x+c))^(1/2),x, algorithm="maxima")
[Out] integrate(1/(sqrt(a*sin(d*x + c) + a)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{x\,\sqrt{a+a\,\sin\left(c+d\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{1}{x\sqrt{a\left(\sin\left(c+dx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+a*sin(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/(x*sqrt(a*(sin(c + d*x) + 1))), x)
```

3.138 $\int \frac{1}{x^2\sqrt{a+a\sin(c+dx)}}\,dx$

Optimal. Leaf size=21

$$\text{Int}\left(\frac{1}{x^2\sqrt{a\sin(c+dx)+a}},x\right)$$

```
[Out] Unintegrable(1/x^2/(a+a*sin(d*x+c))^(1/2),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2\sqrt{a+a\sin(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x^2*Sqrt[a + a*Sin[c + d*x]]),x]
[Out] Defer[Int][1/(x^2*Sqrt[a + a*Sin[c + d*x]]), x]
```

Rubi steps

$$\int \frac{1}{x^2\sqrt{a+a\sin(c+dx)}}\,dx = \int \frac{1}{x^2\sqrt{a+a\sin(c+dx)}}\,dx$$

Mathematica [A] time = 0.80, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\sqrt{a+a\sin(c+dx)}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x^2*Sqrt[a + a*Sin[c + d*x]]),x]
[Out] Integrate[1/(x^2*Sqrt[a + a*Sin[c + d*x]]), x]
```

fricas [A] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{a\sin\left(dx+c\right)+a}}{ax^2\sin\left(dx+c\right)+ax^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+a*sin(d*x+c))^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(a*sin(d*x + c) + a)/(a*x^2*sin(d*x + c) + a*x^2), x)
```

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

$$\int \frac{1}{\sqrt{a\sin\left(dx+c\right)+a}\,x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+a*sin(d*x+c))^(1/2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(a*sin(d*x + c) + a)*x^2), x)
```

maple [A] time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{1}{x^{2}\sqrt{a+a\sin\left(dx+c\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(a+a*sin(d*x+c))^(1/2),x)
```

```
[Out] int(1/x^2/(a+a*sin(d*x+c))^(1/2),x)
```

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

$$\int \frac{1}{\sqrt{a\sin\left(dx+c\right)+a}\,x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+a*sin(d*x+c))^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(a*sin(d*x + c) + a)*x^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{x^2\,\sqrt{a+a\,\sin\left(c+d\,x\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*(a + a*sin(c + d*x))^(1/2)),x)
```

```
[Out] int(1/(x^2*(a + a*sin(c + d*x))^(1/2)), x)
```

<u>**sympy**</u> **[A]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\sqrt{a\left(\sin\left(c+dx\right)+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/(a+a*sin(d*x+c))**(1/2),x)
```

```
[Out] Integral(1/(x**2*sqrt(a*(sin(c + d*x) + 1))), x)
```

3.139 $\int \frac{x^3}{(a+a\sin(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=691

$$\frac{24i\text{Li}_2\left(-e^{\frac{1}{4}i(2e+2fx+\pi)}\right)\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af^4\sqrt{a\sin(e+fx)+a}}-\frac{24i\text{Li}_2\left(e^{\frac{1}{4}i(2e+2fx+\pi)}\right)\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af^4\sqrt{a\sin(e+fx)+a}}-\frac{24i\text{Li}_4\left(-e^{\frac{1}{4}i(2e+2fx+\pi)}\right)\sin\left(\frac{e}{2}+\right.}{af^4\sqrt{a\sin(e+fx)+a}}$$

```
[Out] -3*x^2/a/f^2/(a+a*sin(f*x+e))^(1/2)-1/2*x^3*cot(1/2*e+1/4*Pi+1/2*f*x)/a/f/(
a+a*sin(f*x+e))^(1/2)-24*x*arctanh(exp(1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4
*Pi+1/2*f*x)/a/f^3/(a+a*sin(f*x+e))^(1/2)-x^3*arctanh(exp(1/4*I*(2*f*x+Pi+2
*e)))*sin(1/2*e+1/4*Pi+1/2*f*x)/a/f/(a+a*sin(f*x+e))^(1/2)+24*I*polylog(2,-
exp(1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f*x)/a/f^4/(a+a*sin(f*x+e))
^(1/2)+3*I*x^2*polylog(2,-exp(1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f
*x)/a/f^2/(a+a*sin(f*x+e))^(1/2)-24*I*polylog(2,exp(1/4*I*(2*f*x+Pi+2*e)))*
sin(1/2*e+1/4*Pi+1/2*f*x)/a/f^4/(a+a*sin(f*x+e))^(1/2)-3*I*x^2*polylog(2,ex
p(1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f*x)/a/f^2/(a+a*sin(f*x+e))^(
1/2)-12*x*polylog(3,-exp(1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f*x)/a
/f^3/(a+a*sin(f*x+e))^(1/2)+12*x*polylog(3,exp(1/4*I*(2*f*x+Pi+2*e)))*sin(1
/2*e+1/4*Pi+1/2*f*x)/a/f^3/(a+a*sin(f*x+e))^(1/2)-24*I*polylog(4,-exp(1/4*I
*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f*x)/a/f^4/(a+a*sin(f*x+e))^(1/2)+24
*I*polylog(4,exp(1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f*x)/a/f^4/(a+
a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 691, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {3319, 4186, 4183, 2279, 2391, 2531, 6609, 2282, 6589}

$$\frac{3ix^2\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{1}{4}i(2e+2fx+\pi)}\right)}{af^2\sqrt{a\sin(e+fx)+a}}-\frac{3ix^2\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{1}{4}i(2e+2fx+\pi)}\right)}{af^2\sqrt{a\sin(e+fx)+a}}-\frac{12x\sin\left(\frac{e}{2}+\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (-3*x^2)/(a*f^2*Sqrt[a + a*Sin[e + f*x]]) - (x^3*Cot[e/2 + Pi/4 + (f*x)/2])
/(2*a*f*Sqrt[a + a*Sin[e + f*x]]) - (24*x*ArcTanh[E^((I/4)*(2*e + Pi + 2*f*
x))]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f^3*Sqrt[a + a*Sin[e + f*x]]) - (x^3*Arc
Tanh[E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f*Sqrt[a +
 a*Sin[e + f*x]]) + ((24*I)*PolyLog[2, -E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[e
/2 + Pi/4 + (f*x)/2])/(a*f^4*Sqrt[a + a*Sin[e + f*x]]) + ((3*I)*x^2*PolyLog
[2, -E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f^2*Sqrt[a
 + a*Sin[e + f*x]]) - ((24*I)*PolyLog[2, E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[
```

e/2 + Pi/4 + (f*x)/2])/(a*f^4*Sqrt[a + a*Sin[e + f*x]]) - ((3*I)*x^2*PolyLo
g[2, E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f^2*Sqrt[a
 + a*Sin[e + f*x]]) - (12*x*PolyLog[3, -E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[e
/2 + Pi/4 + (f*x)/2])/(a*f^3*Sqrt[a + a*Sin[e + f*x]]) + (12*x*PolyLog[3, E
^((I/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f^3*Sqrt[a + a*S
in[e + f*x]]) - ((24*I)*PolyLog[4, -E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 +
 Pi/4 + (f*x)/2])/(a*f^4*Sqrt[a + a*Sin[e + f*x]]) + ((24*I)*PolyLog[4, E^(
(I/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f^4*Sqrt[a + a*Sin
[e + f*x]])

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^3}{(a+a\sin(e+fx))^{3/2}}\,dx = \frac{\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\int x^3\csc^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)dx}{2a\sqrt{a+a\sin(e+fx)}}$$

$$= -\frac{3x^2}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} + \frac{\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\int x^3\csc\left(\right.}{4a\sqrt{a+a\sin(e+}}$$

$$= -\frac{3x^2}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{24x\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\mathrm{s}}{af^3\sqrt{a+a\sin(e}}$$

$$= -\frac{3x^2}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{24x\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\mathrm{s}}{af^3\sqrt{a+a\sin(e}}$$

$$= -\frac{3x^2}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{24x\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\mathrm{s}}{af^3\sqrt{a+a\sin(e}}$$

$$= -\frac{3x^2}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{24x\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\mathrm{s}}{af^3\sqrt{a+a\sin(e}}$$

$$= -\frac{3x^2}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^3\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{24x\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\mathrm{s}}{af^3\sqrt{a+a\sin(e}}$$

Mathematica [A] time = 2.93, size = 455, normalized size = 0.66

$$-\frac{x^2\sqrt{a(\sin(e+fx)+1)}\left((6-fx)\sin\left(\frac{1}{2}(e+fx)\right)+(fx+6)\cos\left(\frac{1}{2}(e+fx)\right)\right)}{2a^2f^2\left(\sin\left(\frac{1}{2}(e+fx)\right)+\cos\left(\frac{1}{2}(e+fx)\right)\right)^3} - \frac{(-1)^{3/4}e^{-\frac{3}{2}i(e+fx)}\left(e^{i(e+fx)}+i\right)^3\left(-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3/(a + a*Sin[e + f*x])^(3/2),x]
```

```
[Out] -1/2*((-1)^(3/4)*(I + E^(I*(e + f*x)))^3*(6*(8 + f^2*x^2)*PolyLog[2, -((-1)
^(1/4)*E^((I/2)*(e + f*x)))] - 6*(8 + f^2*x^2)*PolyLog[2, (-1)^(1/4)*E^((I/
2)*(e + f*x))] - I*(24*f*x*Log[1 - (-1)^(1/4)*E^((I/2)*(e + f*x))] + f^3*x^
3*Log[1 - (-1)^(1/4)*E^((I/2)*(e + f*x))] - 24*f*x*Log[1 + (-1)^(1/4)*E^((I
/2)*(e + f*x))] - f^3*x^3*Log[1 + (-1)^(1/4)*E^((I/2)*(e + f*x))] - 24*f*x*
```

```
PolyLog[3, -((-1)^(1/4)*E^((I/2)*(e + f*x)))] + 24*f*x*PolyLog[3, (-1)^(1/4
)*E^((I/2)*(e + f*x))] - (48*I)*PolyLog[4, -((-1)^(1/4)*E^((I/2)*(e + f*x))
)] + (48*I)*PolyLog[4, (-1)^(1/4)*E^((I/2)*(e + f*x))])))/(Sqrt[2]*E^(((3*I
)/2)*(e + f*x))*(((-I)*a*(I + E^(I*(e + f*x)))^2)/E^(I*(e + f*x)))^(3/2)*f^
4) - (x^2*((6 + f*x)*Cos[(e + f*x)/2] + (6 - f*x)*Sin[(e + f*x)/2])*Sqrt[a*
(1 + Sin[e + f*x]])/(2*a^2*f^2*(Cos[(e + f*x)/2] + Sin[(e + f*x)/2])^3)
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sin\left(fx+e\right)+a}\,x^3}{a^2\cos\left(fx+e\right)^2-2\,a^2\sin\left(fx+e\right)-2\,a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+a*sin(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(a*sin(f*x + e) + a)*x^3/(a^2*cos(f*x + e)^2 - 2*a^2*sin(f*x
+ e) - 2*a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+a*sin(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(x^3/(a*sin(f*x + e) + a)^(3/2), x)
```

maple [F] time = 0.06, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(a+a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a+a*sin(f*x+e))^(3/2),x)
```

```
[Out] int(x^3/(a+a*sin(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/(a+a*sin(f*x+e))^(3/2),x, algorithm="maxima")
[Out] integrate(x^3/(a*sin(f*x + e) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3}{\left(a + a\,\sin\left(e + f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(a + a*sin(e + f*x))^(3/2),x)
[Out] int(x^3/(a + a*sin(e + f*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3}{\left(a\left(\sin\left(e + fx\right) + 1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/(a+a*sin(f*x+e))**(3/2),x)
[Out] Integral(x**3/(a*(sin(e + f*x) + 1))**(3/2), x)
```

3.140 $\int \frac{x^2}{(a+a\sin(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=435

$$-\frac{4\text{Li}_3\left(-e^{\frac{1}{4}i(2e+2fx+\pi)}\right)\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af^3\sqrt{a\sin(e+fx)+a}}+\frac{4\text{Li}_3\left(e^{\frac{1}{4}i(2e+2fx+\pi)}\right)\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af^3\sqrt{a\sin(e+fx)+a}}-\frac{4\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\tanh^{-1}\left(\cos\left(\right.\right.}{af^3\sqrt{a\sin(e+fx)+}}$$

```
[Out] -2*x/a/f^2/(a+a*sin(f*x+e))^(1/2)-1/2*x^2*cot(1/2*e+1/4*Pi+1/2*f*x)/a/f/(a+
a*sin(f*x+e))^(1/2)-x^2*arctanh(exp(1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi
+1/2*f*x)/a/f/(a+a*sin(f*x+e))^(1/2)-4*arctanh(cos(1/2*e+1/4*Pi+1/2*f*x))*s
in(1/2*e+1/4*Pi+1/2*f*x)/a/f^3/(a+a*sin(f*x+e))^(1/2)+2*I*x*polylog(2,-exp(
1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f*x)/a/f^2/(a+a*sin(f*x+e))^(1/
2)-2*I*x*polylog(2,exp(1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f*x)/a/f
^2/(a+a*sin(f*x+e))^(1/2)-4*polylog(3,-exp(1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e
+1/4*Pi+1/2*f*x)/a/f^3/(a+a*sin(f*x+e))^(1/2)+4*polylog(3,exp(1/4*I*(2*f*x+
Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f*x)/a/f^3/(a+a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 435, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.389, Rules used = {3319, 4186, 3770, 4183, 2531, 2282, 6589}

$$\frac{2ix\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{1}{4}i(2e+2fx+\pi)}\right)}{af^2\sqrt{a\sin(e+fx)+a}}-\frac{2ix\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{1}{4}i(2e+2fx+\pi)}\right)}{af^2\sqrt{a\sin(e+fx)+a}}-\frac{4\sin\left(\frac{e}{2}+\frac{fx}{2}\right.}{a}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/(a + a*Sin[e + f*x])^(3/2),x]
```

```
[Out] (-2*x)/(a*f^2*Sqrt[a + a*Sin[e + f*x]]) - (x^2*Cot[e/2 + Pi/4 + (f*x)/2])/(
2*a*f*Sqrt[a + a*Sin[e + f*x]]) - (x^2*ArcTanh[E^((I/4)*(2*e + Pi + 2*f*x))
]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f*Sqrt[a + a*Sin[e + f*x]]) - (4*ArcTanh[Co
s[e/2 + Pi/4 + (f*x)/2]]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f^3*Sqrt[a + a*Sin[e
 + f*x]]) + ((2*I)*x*PolyLog[2, -E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 + Pi
/4 + (f*x)/2])/(a*f^2*Sqrt[a + a*Sin[e + f*x]]) - ((2*I)*x*PolyLog[2, E^((I
/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f^2*Sqrt[a + a*Sin[e
 + f*x]]) - (4*PolyLog[3, -E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 + Pi/4 + (
f*x)/2])/(a*f^3*Sqrt[a + a*Sin[e + f*x]]) + (4*PolyLog[3, E^((I/4)*(2*e + P
i + 2*f*x))]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f^3*Sqrt[a + a*Sin[e + f*x]])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
```

```
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{x^2}{(a+a\sin(e+fx))^{3/2}}\,dx = \frac{\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\int x^2\csc^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)dx}{2a\sqrt{a+a\sin(e+fx)}}$$

$$= -\frac{2x}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} + \frac{\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\int x^2\csc\left(\frac{e}{2}\right.}{4a\sqrt{a+a\sin(e+}}$$

$$= -\frac{2x}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{x^2\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\sin}{af\sqrt{a+a\sin(e+f}}$$

$$= -\frac{2x}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{x^2\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\sin}{af\sqrt{a+a\sin(e+f}}$$

$$= -\frac{2x}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{x^2\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\sin}{af\sqrt{a+a\sin(e+f}}$$

$$= -\frac{2x}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x^2\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{x^2\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\sin}{af\sqrt{a+a\sin(e+f}}$$

Mathematica [A] time = 2.12, size = 352, normalized size = 0.81

$$-\frac{x\sqrt{a(\sin(e+fx)+1)}\left((4-fx)\sin\left(\frac{1}{2}(e+fx)\right)+(fx+4)\cos\left(\frac{1}{2}(e+fx)\right)\right)}{2a^2f^2\left(\sin\left(\frac{1}{2}(e+fx)\right)+\cos\left(\frac{1}{2}(e+fx)\right)\right)^3}+\frac{\sqrt[4]{-1}\,e^{-\frac{3}{2}i(e+fx)}\left(e^{i(e+fx)}+i\right)^3\left(-f^2x\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2/(a + a*Sin[e + f*x])^(3/2),x]
```

```
[Out] ((-1)^(1/4)*(I + E^(I*(e + f*x)))^3*(16*ArcTanh[(-1)^(1/4)*E^((I/2)*(e + f*
x))] - f^2*x^2*Log[1 - (-1)^(1/4)*E^((I/2)*(e + f*x))] + f^2*x^2*Log[1 + (-
1)^(1/4)*E^((I/2)*(e + f*x))] - (4*I)*f*x*PolyLog[2, -((-1)^(1/4)*E^((I/2)*
```

```
(e + f*x)))] + (4*I)*f*x*PolyLog[2, (-1)^(1/4)*E^((I/2)*(e + f*x))] + 8*Pol
yLog[3, -((-1)^(1/4)*E^((I/2)*(e + f*x)))] - 8*PolyLog[3, (-1)^(1/4)*E^((I/
2)*(e + f*x))]))/(2*Sqrt[2]*E^(((3*I)/2)*(e + f*x))*(((-I)*a*(I + E^(I*(e +
 f*x)))^2)/E^(I*(e + f*x)))^(3/2)*f^3) - (x*((4 + f*x)*Cos[(e + f*x)/2] + (
4 - f*x)*Sin[(e + f*x)/2])*Sqrt[a*(1 + Sin[e + f*x])])/(2*a^2*f^2*(Cos[(e +
 f*x)/2] + Sin[(e + f*x)/2])^3)
```

fricas [F] time = 0.78, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sin\left(fx+e\right)+a}\,x^2}{a^2\cos\left(fx+e\right)^2-2\,a^2\sin\left(fx+e\right)-2\,a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+a*sin(f*x+e))^(3/2),x, algorithm="fricas")
[Out] integral(-sqrt(a*sin(f*x + e) + a)*x^2/(a^2*cos(f*x + e)^2 - 2*a^2*sin(f*x
+ e) - 2*a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+a*sin(f*x+e))^(3/2),x, algorithm="giac")
[Out] integrate(x^2/(a*sin(f*x + e) + a)^(3/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(a+a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a+a*sin(f*x+e))^(3/2),x)
[Out] int(x^2/(a+a*sin(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/(a+a*sin(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(x^2/(a*sin(f*x + e) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^2}{\left(a + a\,\sin\left(e + f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(a + a*sin(e + f*x))^(3/2),x)
```

```
[Out] int(x^2/(a + a*sin(e + f*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2}{\left(a\left(\sin\left(e + fx\right) + 1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2/(a+a*sin(f*x+e))**(3/2),x)
```

```
[Out] Integral(x**2/(a*(sin(e + f*x) + 1))**(3/2), x)
```

3.141 $\int \frac{x}{(a+a\sin(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=249

$$\frac{i\text{Li}_2\left(-e^{\frac{1}{4}i(2e+2fx+\pi)}\right)\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af^2\sqrt{a\sin(e+fx)+a}}-\frac{i\text{Li}_2\left(e^{\frac{1}{4}i(2e+2fx+\pi)}\right)\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)}{af^2\sqrt{a\sin(e+fx)+a}}-\frac{1}{af^2\sqrt{a\sin(e+fx)+a}}-\frac{x\sin\left(\frac{e}{2}+\right.}{}$$

```
[Out] -1/a/f^2/(a+a*sin(f*x+e))^(1/2)-1/2*x*cot(1/2*e+1/4*Pi+1/2*f*x)/a/f/(a+a*si
n(f*x+e))^(1/2)-x*arctanh(exp(1/4*I*(2*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f
*x)/a/f/(a+a*sin(f*x+e))^(1/2)+I*polylog(2,-exp(1/4*I*(2*f*x+Pi+2*e)))*sin(
1/2*e+1/4*Pi+1/2*f*x)/a/f^2/(a+a*sin(f*x+e))^(1/2)-I*polylog(2,exp(1/4*I*(2
*f*x+Pi+2*e)))*sin(1/2*e+1/4*Pi+1/2*f*x)/a/f^2/(a+a*sin(f*x+e))^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.312, Rules used = {3319, 4185, 4183, 2279, 2391}

$$\frac{i\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,-e^{\frac{1}{4}i(2e+2fx+\pi)}\right)}{af^2\sqrt{a\sin(e+fx)+a}}-\frac{i\sin\left(\frac{e}{2}+\frac{fx}{2}+\frac{\pi}{4}\right)\text{PolyLog}\left(2,e^{\frac{1}{4}i(2e+2fx+\pi)}\right)}{af^2\sqrt{a\sin(e+fx)+a}}-\frac{1}{af^2\sqrt{a\sin(e+f}}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + a*Sin[e + f*x])^(3/2),x]
```

```
[Out] -(1/(a*f^2*Sqrt[a + a*Sin[e + f*x]])) - (x*Cot[e/2 + Pi/4 + (f*x)/2])/(2*a*
f*Sqrt[a + a*Sin[e + f*x]]) - (x*ArcTanh[E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[
e/2 + Pi/4 + (f*x)/2])/(a*f*Sqrt[a + a*Sin[e + f*x]]) + (I*PolyLog[2, -E^((
I/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 + Pi/4 + (f*x)/2])/(a*f^2*Sqrt[a + a*Sin[
e + f*x]]) - (I*PolyLog[2, E^((I/4)*(2*e + Pi + 2*f*x))]*Sin[e/2 + Pi/4 + (
f*x)/2])/(a*f^2*Sqrt[a + a*Sin[e + f*x]])
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3319

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> Dist[((2*a)^IntPart[n]*(a + b*Sin[e + f*x])^FracPart[n])/Sin[
e/2 + (a*Pi)/(4*b) + (f*x)/2]^(2*FracPart[n]), Int[(c + d*x)^m*Sin[e/2 + (a
*Pi)/(4*b) + (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && E
qQ[a^2 - b^2, 0] && IntegerQ[n + 1/2] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rubi steps

$$\int \frac{x}{(a+a\sin(e+fx))^{3/2}}\,dx = \frac{\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\int x\csc^3\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)dx}{2a\sqrt{a+a\sin(e+fx)}}$$

$$= -\frac{1}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} + \frac{\sin\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)\int x\csc\left(\frac{e}{2}\right.}{4a\sqrt{a+a\sin(e+f}}$$

$$= -\frac{1}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{x\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\sin\left(\right.}{af\sqrt{a+a\sin(e+f}}$$

$$= -\frac{1}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{x\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\sin\left(\right.}{af\sqrt{a+a\sin(e+f}}$$

$$= -\frac{1}{af^2\sqrt{a+a\sin(e+fx)}} - \frac{x\cot\left(\frac{e}{2}+\frac{\pi}{4}+\frac{fx}{2}\right)}{2af\sqrt{a+a\sin(e+fx)}} - \frac{x\tanh^{-1}\left(e^{\frac{1}{4}i(2e+\pi+2fx)}\right)\sin\left(\right.}{af\sqrt{a+a\sin(e+f}}$$

Mathematica [A] time = 2.72, size = 308, normalized size = 1.24

$$\frac{\left(\sin\left(\frac{1}{2}(e+fx)\right)+\cos\left(\frac{1}{2}(e+fx)\right)\right)^3\left(2i\left(\mathrm{Li}_2\left(-e^{\frac{1}{4}i(2e+2fx+\pi)}\right)-\mathrm{Li}_2\left(e^{\frac{1}{4}i(2e+2fx+\pi)}\right)\right)+\frac{1}{2}(2e+2fx+\pi)\left(\log\left(1-e^{\frac{1}{4}i(2e+2fx+\pi)}\right)-\log\left(1+e^{\frac{1}{4}i(2e+2fx+\pi)}\right)\right)-\pi \tan}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(a + a*Sin[e + f*x])^(3/2),x]
```

```
[Out] (2*f*x*Sin[(e + f*x)/2]*(Cos[(e + f*x)/2] + Sin[(e + f*x)/2]) - (2 + f*x)*(
Cos[(e + f*x)/2] + Sin[(e + f*x)/2])^2 + ((-(Pi*ArcTanh[(-1 + Tan[(e + f*x)
/4])/Sqrt[2]]) + ((2*e + Pi + 2*f*x)*(Log[1 - E^((I/4)*(2*e + Pi + 2*f*x))]
 - Log[1 + E^((I/4)*(2*e + Pi + 2*f*x))]))/2 + (2*I)*(PolyLog[2, -E^((I/4)*
(2*e + Pi + 2*f*x))] - PolyLog[2, E^((I/4)*(2*e + Pi + 2*f*x))]))*(Cos[(e +
 f*x)/2] + Sin[(e + f*x)/2])^3)/Sqrt[2] + (e*ArcSin[Csc[(2*e + Pi + 2*f*x)/
4]]*(1 + Sin[e + f*x])*Sin[(2*e - Pi + 2*f*x)/4])/Sqrt[(-1 + Sin[e + f*x])/
(1 + Sin[e + f*x])])/(2*f^2*(a*(1 + Sin[e + f*x]))^(3/2))
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sin\left(fx+e\right)+a}\,x}{a^2\cos\left(fx+e\right)^2-2\,a^2\sin\left(fx+e\right)-2\,a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+a*sin(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(a*sin(f*x + e) + a)*x/(a^2*cos(f*x + e)^2 - 2*a^2*sin(f*x +
e) - 2*a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+a*sin(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(x/(a*sin(f*x + e) + a)^(3/2), x)
```

maple [F] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(a+a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a+a*sin(f*x+e))^(3/2),x)
```

```
[Out] int(x/(a+a*sin(f*x+e))^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+a*sin(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(x/(a*sin(f*x + e) + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x}{\left(a+a\,\sin\left(e+f\,x\right)\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(a + a*sin(e + f*x))^(3/2),x)
```

```
[Out] int(x/(a + a*sin(e + f*x))^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x}{\left(a\left(\sin\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(a+a*sin(f*x+e))**(3/2),x)
```

```
[Out] Integral(x/(a*(sin(e + f*x) + 1))**(3/2), x)
```

3.142 $\int \frac{1}{x(a+a\sin(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=21

$$\text{Int}\left(\frac{1}{x(a\sin(e+fx)+a)^{3/2}},x\right)$$

```
[Out] Unintegrable(1/x/(a+a*sin(f*x+e))^(3/2),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x(a+a\sin(e+fx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x*(a + a*Sin[e + f*x])^(3/2)),x]
[Out] Defer[Int][1/(x*(a + a*Sin[e + f*x])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{x(a+a\sin(e+fx))^{3/2}}\,dx = \int \frac{1}{x(a+a\sin(e+fx))^{3/2}}\,dx$$

Mathematica [A] time = 35.57, size = 0, normalized size = 0.00

$$\int \frac{1}{x(a+a\sin(e+fx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x*(a + a*Sin[e + f*x])^(3/2)),x]
[Out] Integrate[1/(x*(a + a*Sin[e + f*x])^(3/2)), x]
```

fricas [A] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sin\left(fx+e\right)+a}}{a^2x\cos\left(fx+e\right)^2-2\,a^2x\sin\left(fx+e\right)-2\,a^2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+a*sin(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(a*sin(f*x + e) + a)/(a^2*x*cos(f*x + e)^2 - 2*a^2*x*sin(f*x
+ e) - 2*a^2*x), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+a*sin(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((a*sin(f*x + e) + a)^(3/2)*x), x)
```

maple [A] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(a+a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x/(a+a*sin(f*x+e))^(3/2),x)
```

```
[Out] int(1/x/(a+a*sin(f*x+e))^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+a*sin(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((a*sin(f*x + e) + a)^(3/2)*x), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{x\,{\left(a+a\,\sin\left(e+f\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x*(a + a*sin(e + f*x))^(3/2)),x)
```

```
[Out] int(1/(x*(a + a*sin(e + f*x))^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x\left(a\left(\sin\left(e+fx\right)+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x/(a+a*sin(f*x+e))**(3/2),x)
```

```
[Out] Integral(1/(x*(a*(sin(e + f*x) + 1))**(3/2)), x)
```

3.143 $\int \frac{1}{x^2(a+a\sin(e+fx))^{3/2}}\,dx$

Optimal. Leaf size=21

$$\text{Int}\left(\frac{1}{x^2(a\sin(e+fx)+a)^{3/2}},x\right)$$

```
[Out] Unintegrable(1/x^2/(a+a*sin(f*x+e))^(3/2),x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{x^2(a+a\sin(e+fx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/(x^2*(a + a*Sin[e + f*x])^(3/2)),x]
```

```
[Out] Defer[Int][1/(x^2*(a + a*Sin[e + f*x])^(3/2)), x]
```

Rubi steps

$$\int \frac{1}{x^2(a+a\sin(e+fx))^{3/2}}\,dx = \int \frac{1}{x^2(a+a\sin(e+fx))^{3/2}}\,dx$$

Mathematica [A] time = 18.86, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2(a+a\sin(e+fx))^{3/2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/(x^2*(a + a*Sin[e + f*x])^(3/2)),x]
```

```
[Out] Integrate[1/(x^2*(a + a*Sin[e + f*x])^(3/2)), x]
```

fricas [A] time = 0.83, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{a\sin\left(fx+e\right)+a}}{a^2x^2\cos\left(fx+e\right)^2-2\,a^2x^2\sin\left(fx+e\right)-2\,a^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+a*sin(f*x+e))^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(a*sin(f*x + e) + a)/(a^2*x^2*cos(f*x + e)^2 - 2*a^2*x^2*sin(
f*x + e) - 2*a^2*x^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+a*sin(f*x+e))^(3/2),x, algorithm="giac")
```

```
[Out] integrate(1/((a*sin(f*x + e) + a)^(3/2)*x^2), x)
```

maple [A] time = 0.05, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2\left(a+a\sin\left(fx+e\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(a+a*sin(f*x+e))^(3/2),x)
```

```
[Out] int(1/x^2/(a+a*sin(f*x+e))^(3/2),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a\sin\left(fx+e\right)+a\right)^{\frac{3}{2}}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x^2/(a+a*sin(f*x+e))^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(1/((a*sin(f*x + e) + a)^(3/2)*x^2), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{1}{x^2\,{\left(a+a\,\sin\left(e+f\,x\right)\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2*(a + a*sin(e + f*x))^(3/2)),x)
```

```
[Out] int(1/(x^2*(a + a*sin(e + f*x))^(3/2)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{x^2 \left(a \left(\sin \left(e + fx\right) + 1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**2/(a+a*sin(f*x+e))**(3/2),x)
```

```
[Out] Integral(1/(x**2*(a*(sin(e + f*x) + 1))**(3/2)), x)
```

3.144 $\int \frac{\sqrt[3]{a+a\sin(c+dx)}}{x}\,dx$

Optimal. Leaf size=21

$$\text{Int}\left(\frac{\sqrt[3]{a\sin(c+dx)+a}}{x},x\right)$$

```
[Out] Unintegrable((a+a*sin(d*x+c))^(1/3)/x,x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sqrt[3]{a+a\sin(c+dx)}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + a*Sin[c + d*x])^(1/3)/x,x]
```

```
[Out] Defer[Int][(a + a*Sin[c + d*x])^(1/3)/x, x]
```

Rubi steps

$$\int \frac{\sqrt[3]{a+a\sin(c+dx)}}{x}\,dx=\int \frac{\sqrt[3]{a+a\sin(c+dx)}}{x}\,dx$$

Mathematica [A] time = 3.22, size = 0, normalized size = 0.00

$$\int \frac{\sqrt[3]{a+a\sin(c+dx)}}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + a*Sin[c + d*x])^(1/3)/x,x]
```

```
[Out] Integrate[(a + a*Sin[c + d*x])^(1/3)/x, x]
```

fricas [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/3)/x,x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >>  Error detected within library code:   integ
rate: implementation incomplete (has polynomial part)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a\sin(dx+c)+a)^{\frac{1}{3}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/3)/x,x, algorithm="giac")
```

```
[Out] integrate((a*sin(d*x + c) + a)^(1/3)/x, x)
```

maple [A] time = 0.11, size = 0, normalized size = 0.00

$$\int \frac{(a+a\sin(dx+c))^{\frac{1}{3}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+a*sin(d*x+c))^(1/3)/x,x)
```

```
[Out] int((a+a*sin(d*x+c))^(1/3)/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a\sin(dx+c)+a)^{\frac{1}{3}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))^(1/3)/x,x, algorithm="maxima")
```

```
[Out] integrate((a*sin(d*x + c) + a)^(1/3)/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{(a+a\,\sin(c+d\,x))^{1/3}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(c + d*x))^(1/3)/x,x)
```

```
[Out] int((a + a*sin(c + d*x))^(1/3)/x, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt[3]{a\left(\sin\left(c+dx\right)+1\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+a*sin(d*x+c))**(1/3)/x,x)
```

```
[Out] Integral((a*(sin(c + d*x) + 1))**(1/3)/x, x)
```

3.145 $\int (c+dx)^m (a+a\sin(e+fx))^n\,dx$

Optimal. Leaf size=23

$$\text{Int}\left((c+dx)^m (a\sin(e+fx)+a)^n, x\right)$$

```
[Out] Unintegrable((d*x+c)^m*(a+a*sin(f*x+e))^n,x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (c+dx)^m (a+a\sin(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m*(a + a*Sin[e + f*x])^n,x]
```

```
[Out] Defer[Int][(c + d*x)^m*(a + a*Sin[e + f*x])^n, x]
```

Rubi steps

$$\int (c+dx)^m (a+a\sin(e+fx))^n\,dx = \int (c+dx)^m (a+a\sin(e+fx))^n\,dx$$

Mathematica [A] time = 1.28, size = 0, normalized size = 0.00

$$\int (c+dx)^m (a+a\sin(e+fx))^n\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m*(a + a*Sin[e + f*x])^n,x]
```

```
[Out] Integrate[(c + d*x)^m*(a + a*Sin[e + f*x])^n, x]
```

fricas [A] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left((dx+c)^m \left(a\sin\left(fx+e\right)+a\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m*(a*sin(f*x + e) + a)^n, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(a\sin\left(fx+e\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e))^n,x, algorithm="giac")
[Out] integrate((d*x + c)^m*(a*sin(f*x + e) + a)^n, x)
```

maple [A] time = 0.38, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(a+a\sin\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+a*sin(f*x+e))^n,x)
[Out] int((d*x+c)^m*(a+a*sin(f*x+e))^n,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(a\sin\left(fx+e\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((d*x + c)^m*(a*sin(f*x + e) + a)^n, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int {\left(a+a\,\sin\left(e+f\,x\right)\right)}^n\,{\left(c+d\,x\right)}^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(e + f*x))^n*(c + d*x)^m,x)
[Out] int((a + a*sin(e + f*x))^n*(c + d*x)^m, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+a*sin(f*x+e))**n,x)
[Out] Timed out
```

3.146 $\int (c+dx)^m (a+a\sin(e+fx))^3\,dx$

Optimal. Leaf size=449

$$-\frac{15a^3e^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right)}{8f}+\frac{3ia^32^{-m-3}e^{2i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{2i}{\cdots}\right.}{f}$$

```
[Out] 5/2*a^3*(d*x+c)^(1+m)/d/(1+m)-15/8*a^3*exp(I*(e-c*f/d))*(d*x+c)^m*GAMMA(1+m
,-I*f*(d*x+c)/d)/f/((-I*f*(d*x+c)/d)^m)-15/8*a^3*(d*x+c)^m*GAMMA(1+m,I*f*(d
*x+c)/d)/exp(I*(e-c*f/d))/f/((I*f*(d*x+c)/d)^m)+3*I*2^(-3-m)*a^3*exp(2*I*(e
-c*f/d))*(d*x+c)^m*GAMMA(1+m,-2*I*f*(d*x+c)/d)/f/((-I*f*(d*x+c)/d)^m)-3*I*2
^(-3-m)*a^3*(d*x+c)^m*GAMMA(1+m,2*I*f*(d*x+c)/d)/exp(2*I*(e-c*f/d))/f/((I*f
*(d*x+c)/d)^m)+1/8*3^(-1-m)*a^3*exp(3*I*(e-c*f/d))*(d*x+c)^m*GAMMA(1+m,-3*I
*f*(d*x+c)/d)/f/((-I*f*(d*x+c)/d)^m)+1/8*3^(-1-m)*a^3*(d*x+c)^m*GAMMA(1+m,3
*I*f*(d*x+c)/d)/exp(3*I*(e-c*f/d))/f/((I*f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.61, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3318, 3312, 3307, 2181, 3308}

$$-\frac{15a^3e^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{if(c+dx)}{d}\right)}{8f}+\frac{3ia^32^{-m-3}e^{2i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\text{Gam}\cdots}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + a*Sin[e + f*x])^3,x]
```

```
[Out] (5*a^3*(c + d*x)^(1 + m))/(2*d*(1 + m)) - (15*a^3*E^(I*(e - (c*f)/d))*(c +
d*x)^m*Gamma[1 + m, ((-I)*f*(c + d*x))/d])/(8*f*(((-I)*f*(c + d*x))/d)^m) -
 (15*a^3*(c + d*x)^m*Gamma[1 + m, (I*f*(c + d*x))/d])/(8*E^(I*(e - (c*f)/d)
)*f*((I*f*(c + d*x))/d)^m) + ((3*I)*2^(-3 - m)*a^3*E^((2*I)*(e - (c*f)/d))*
(c + d*x)^m*Gamma[1 + m, ((-2*I)*f*(c + d*x))/d])/(f*(((-I)*f*(c + d*x))/d)
^m) - ((3*I)*2^(-3 - m)*a^3*(c + d*x)^m*Gamma[1 + m, ((2*I)*f*(c + d*x))/d]
)/(E^((2*I)*(e - (c*f)/d))*f*((I*f*(c + d*x))/d)^m) + (3^(-1 - m)*a^3*E^((3
*I)*(e - (c*f)/d))*(c + d*x)^m*Gamma[1 + m, ((-3*I)*f*(c + d*x))/d])/(8*f*(
((-I)*f*(c + d*x))/d)^m) + (3^(-1 - m)*a^3*(c + d*x)^m*Gamma[1 + m, ((3*I)*
f*(c + d*x))/d])/(8*E^((3*I)*(e - (c*f)/d))*f*((I*f*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
```

```
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int (c+dx)^m(a+a\sin(e+fx))^3\,dx = \left(8a^3\right)\int (c+dx)^m\sin^6\left(\frac{1}{2}\left(e+\frac{\pi}{2}\right)+\frac{fx}{2}\right)dx$$
$$= \left(8a^3\right)\int\left(\frac{5}{16}(c+dx)^m-\frac{3}{16}(c+dx)^m\cos(2e+2fx)+\frac{15}{32}(c+dx)^m\sin(e+$$
$$= \frac{5a^3(c+dx)^{1+m}}{2d(1+m)}-\frac{1}{4}a^3\int (c+dx)^m\sin(3e+3fx)\,dx-\frac{1}{2}\left(3a^3\right)\int (c+dx)^m c$$
$$= \frac{5a^3(c+dx)^{1+m}}{2d(1+m)}-\frac{1}{8}\left(ia^3\right)\int e^{-i(3e+3fx)}(c+dx)^m\,dx+\frac{1}{8}\left(ia^3\right)\int e^{i(3e+3fx)}(c+$$
$$= \frac{5a^3(c+dx)^{1+m}}{2d(1+m)}-\frac{15a^3e^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{if(c+dx)}{d}\right)}{8f}-$$

Mathematica [A] time = 0.90, size = 376, normalized size = 0.84

$$\frac{1}{24}a^3(c+dx)^m\left(-\frac{45e^{i\left(e-\frac{cf}{d}\right)}\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right)}{f}+\frac{9i2^{-m}e^{2i\left(e-\frac{cf}{d}\right)}\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{2if(c+dx)}{d}\right)}{f}+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + a*Sin[e + f*x])^3,x]
```

```
[Out] (a^3*(c + d*x)^m*((60*(c + d*x))/(d*(1 + m)) - (45*E^(I*(e - (c*f)/d))*Gamm
a[1 + m, ((-I)*f*(c + d*x))/d])/(f*(((-I)*f*(c + d*x))/d)^m) - (45*Gamma[1
+ m, (I*f*(c + d*x))/d])/(E^(I*(e - (c*f)/d))*f*((I*f*(c + d*x))/d)^m) + ((
9*I)*E^((2*I)*(e - (c*f)/d))*Gamma[1 + m, ((-2*I)*f*(c + d*x))/d])/(2^m*f*(
((-I)*f*(c + d*x))/d)^m) - ((9*I)*Gamma[1 + m, ((2*I)*f*(c + d*x))/d])/(2^m
*E^((2*I)*(e - (c*f)/d))*f*((I*f*(c + d*x))/d)^m) + (E^((3*I)*(e - (c*f)/d)
)*Gamma[1 + m, ((-3*I)*f*(c + d*x))/d])/(3^m*f*(((-I)*f*(c + d*x))/d)^m) +
Gamma[1 + m, ((3*I)*f*(c + d*x))/d]/(3^m*E^((3*I)*(e - (c*f)/d))*f*((I*f*(c
 + d*x))/d)^m)))/24
```

fricas [A] time = 0.79, size = 378, normalized size = 0.84

$$\frac{\left(a^3dm+a^3d\right)e^{\left(-\frac{dm\log\left(\frac{3if}{d}\right)+3ide-3icf}{d}\right)}\Gamma\left(m+1,\frac{3idfx+3icf}{d}\right)+\left(-9ia^3dm-9ia^3d\right)e^{\left(-\frac{dm\log\left(\frac{2if}{d}\right)+2ide-2icf}{d}\right)}\Gamma\left(m+1,\frac{2idfx+}{d}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/24*((a^3*d*m + a^3*d)*e^(-(d*m*log(3*I*f/d) + 3*I*d*e - 3*I*c*f)/d)*gamma
(m + 1, (3*I*d*f*x + 3*I*c*f)/d) + (-9*I*a^3*d*m - 9*I*a^3*d)*e^(-(d*m*log(
2*I*f/d) + 2*I*d*e - 2*I*c*f)/d)*gamma(m + 1, (2*I*d*f*x + 2*I*c*f)/d) - 45
*(a^3*d*m + a^3*d)*e^(-(d*m*log(I*f/d) + I*d*e - I*c*f)/d)*gamma(m + 1, (I*
d*f*x + I*c*f)/d) - 45*(a^3*d*m + a^3*d)*e^(-(d*m*log(-I*f/d) - I*d*e + I*c
*f)/d)*gamma(m + 1, (-I*d*f*x - I*c*f)/d) + (9*I*a^3*d*m + 9*I*a^3*d)*e^(-(
d*m*log(-2*I*f/d) - 2*I*d*e + 2*I*c*f)/d)*gamma(m + 1, (-2*I*d*f*x - 2*I*c*
f)/d) + (a^3*d*m + a^3*d)*e^(-(d*m*log(-3*I*f/d) - 3*I*d*e + 3*I*c*f)/d)*ga
mma(m + 1, (-3*I*d*f*x - 3*I*c*f)/d) + 60*(a^3*d*f*x + a^3*c*f)*(d*x + c)^m
)/(d*f*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a\sin\left(fx+e\right)+a\right)^{3}(dx+c)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e))^3,x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e) + a)^3*(d*x + c)^m, x)
```

maple [F] time = 0.43, size = 0, normalized size = 0.00

$$\int (dx+c)^{m}\left(a+a\sin\left(fx+e\right)\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+a*sin(f*x+e))^3,x)
```

```
[Out] int((d*x+c)^m*(a+a*sin(f*x+e))^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{(dx+c)^{m+1}a^{3}}{d(m+1)}+\frac{6\,a^{3}e^{\left(m\log(dx+c)+\log(dx+c)\right)}-6\left(a^{3}dm+a^{3}d\right)\int (dx+c)^{m}\cos\left(2\,fx+2\,e\right)\,dx-\left(a^{3}dm+a^{3}d\right)\int (d}{4\,(dm+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] (d*x + c)^(m + 1)*a^3/(d*(m + 1)) + 1/4*(6*a^3*e^(m*log(d*x + c) + log(d*x
+ c)) - 6*(a^3*d*m + a^3*d)*integrate((d*x + c)^m*cos(2*f*x + 2*e), x) - (a
^3*d*m + a^3*d)*integrate((d*x + c)^m*sin(3*f*x + 3*e), x) + 15*(a^3*d*m +
a^3*d)*integrate((d*x + c)^m*sin(f*x + e), x))/(d*m + d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a + a \sin\left(e + f x\right)\right)^3 (c + d x)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(e + f*x))^3*(c + d*x)^m,x)
```

```
[Out] int((a + a*sin(e + f*x))^3*(c + d*x)^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$a^3 \left(\int 3 (c + dx)^m \sin\left(e + fx\right) dx + \int 3 (c + dx)^m \sin^2\left(e + fx\right) dx + \int (c + dx)^m \sin^3\left(e + fx\right) dx + \int (c + dx)^m$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+a*sin(f*x+e))**3,x)
```

```
[Out] a**3*(Integral(3*(c + d*x)**m*sin(e + f*x), x) + Integral(3*(c + d*x)**m*si
n(e + f*x)**2, x) + Integral((c + d*x)**m*sin(e + f*x)**3, x) + Integral((c
 + d*x)**m, x))
```

3.147 $\int (c+dx)^m(a+a\sin(e+fx))^2\,dx$

Optimal. Leaf size=299

$$-\frac{a^2e^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right)}{f}+\frac{ia^22^{-m-3}e^{2i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{2if(c}{}\right.}{f}$$

```
[Out] 3/2*a^2*(d*x+c)^(1+m)/d/(1+m)-a^2*exp(I*(e-c*f/d))*(d*x+c)^m*GAMMA(1+m,-I*f
*(d*x+c)/d)/f/((-I*f*(d*x+c)/d)^m)-a^2*(d*x+c)^m*GAMMA(1+m,I*f*(d*x+c)/d)/e
xp(I*(e-c*f/d))/f/((I*f*(d*x+c)/d)^m)+I*2^(-3-m)*a^2*exp(2*I*(e-c*f/d))*(d*
x+c)^m*GAMMA(1+m,-2*I*f*(d*x+c)/d)/f/((-I*f*(d*x+c)/d)^m)-I*2^(-3-m)*a^2*(d
*x+c)^m*GAMMA(1+m,2*I*f*(d*x+c)/d)/exp(2*I*(e-c*f/d))/f/((I*f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.37, antiderivative size = 299, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3318, 3312, 3307, 2181, 3308}

$$-\frac{a^2e^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{if(c+dx)}{d}\right)}{f}+\frac{ia^22^{-m-3}e^{2i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\text{Gamm}}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + a*Sin[e + f*x])^2,x]
```

```
[Out] (3*a^2*(c + d*x)^(1 + m))/(2*d*(1 + m)) - (a^2*E^(I*(e - (c*f)/d))*(c + d*x
)^m*Gamma[1 + m, ((-I)*f*(c + d*x))/d])/(f*(((-I)*f*(c + d*x))/d)^m) - (a^2
*(c + d*x)^m*Gamma[1 + m, (I*f*(c + d*x))/d])/(E^(I*(e - (c*f)/d))*f*((I*f*
(c + d*x))/d)^m) + (I*2^(-3 - m)*a^2*E^((2*I)*(e - (c*f)/d))*(c + d*x)^m*Ga
mma[1 + m, ((-2*I)*f*(c + d*x))/d])/(f*(((-I)*f*(c + d*x))/d)^m) - (I*2^(-3
 - m)*a^2*(c + d*x)^m*Gamma[1 + m, ((2*I)*f*(c + d*x))/d])/(E^((2*I)*(e - (
c*f)/d))*f*((I*f*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)]])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
```

```
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rubi steps

$$\int (c+dx)^m(a+a\sin(e+fx))^2\,dx = \left(4a^2\right)\int (c+dx)^m\sin^4\left(\frac{1}{2}\left(e+\frac{\pi}{2}\right)+\frac{fx}{2}\right)dx$$

$$= \left(4a^2\right)\int\left(\frac{3}{8}(c+dx)^m-\frac{1}{8}(c+dx)^m\cos(2e+2fx)+\frac{1}{2}(c+dx)^m\sin(e+fx)\right.$$

$$= \frac{3a^2(c+dx)^{1+m}}{2d(1+m)}-\frac{1}{2}a^2\int (c+dx)^m\cos(2e+2fx)\,dx+\left(2a^2\right)\int (c+dx)^m\sin$$

$$= \frac{3a^2(c+dx)^{1+m}}{2d(1+m)}+\left(ia^2\right)\int e^{-i(e+fx)}(c+dx)^m\,dx-\left(ia^2\right)\int e^{i(e+fx)}(c+dx)^m\,d$$

$$= \frac{3a^2(c+dx)^{1+m}}{2d(1+m)}-\frac{a^2e^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{if(c+dx)}{d}\right)}{f}-\frac{a^2}{}$$

Mathematica [A] time = 0.31, size = 260, normalized size = 0.87

$$\frac{1}{8}a^2(c+dx)^m\left(-\frac{8e^{i\left(e-\frac{cf}{d}\right)}\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right)}{f}+\frac{i2^{-m}e^{2i\left(e-\frac{cf}{d}\right)}\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{2if(c+dx)}{d}\right)}{f}-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + a*Sin[e + f*x])^2,x]
```

```
[Out] (a^2*(c + d*x)^m*((12*(c + d*x))/(d*(1 + m)) - (8*E^(I*(e - (c*f)/d))*Gamma
[1 + m, ((-I)*f*(c + d*x))/d])/(f*(((-I)*f*(c + d*x))/d)^m) - (8*Gamma[1 +
m, (I*f*(c + d*x))/d])/(E^(I*(e - (c*f)/d))*f*((I*f*(c + d*x))/d)^m) + (I*E
^((2*I)*(e - (c*f)/d))*Gamma[1 + m, ((-2*I)*f*(c + d*x))/d])/(2^m*f*(((-I)*
f*(c + d*x))/d)^m) - (I*Gamma[1 + m, ((2*I)*f*(c + d*x))/d])/(2^m*E^((2*I)*
(e - (c*f)/d))*f*((I*f*(c + d*x))/d)^m)))/8
```

fricas [A] time = 0.83, size = 266, normalized size = 0.89

$$\frac{\left(-i\,a^2dm-i\,a^2d\right)e^{\left(-\frac{dm\log\left(\frac{2if}{d}\right)+2ide-2icf}{d}\right)}\Gamma\left(m+1,\frac{2idfx+2icf}{d}\right)-8\left(a^2dm+a^2d\right)e^{\left(-\frac{dm\log\left(\frac{if}{d}\right)+ide-icf}{d}\right)}\Gamma\left(m+1,\frac{idfx+icf}{d}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/8*((-I*a^2*d*m - I*a^2*d)*e^(-(d*m*log(2*I*f/d) + 2*I*d*e - 2*I*c*f)/d)*g
amma(m + 1, (2*I*d*f*x + 2*I*c*f)/d) - 8*(a^2*d*m + a^2*d)*e^(-(d*m*log(I*f
/d) + I*d*e - I*c*f)/d)*gamma(m + 1, (I*d*f*x + I*c*f)/d) - 8*(a^2*d*m + a^
2*d)*e^(-(d*m*log(-I*f/d) - I*d*e + I*c*f)/d)*gamma(m + 1, (-I*d*f*x - I*c*
f)/d) + (I*a^2*d*m + I*a^2*d)*e^(-(d*m*log(-2*I*f/d) - 2*I*d*e + 2*I*c*f)/d
)*gamma(m + 1, (-2*I*d*f*x - 2*I*c*f)/d) + 12*(a^2*d*f*x + a^2*c*f)*(d*x +
c)^m)/(d*f*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(a\sin\left(fx+e\right)+a\right)^2(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e) + a)^2*(d*x + c)^m, x)
```

maple [F] time = 0.36, size = 0, normalized size = 0.00

$$\int (dx+c)^{m} \left(a+a\sin\left(fx+e\right)\right)^{2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+a*sin(f*x+e))^2,x)
```

```
[Out] int((d*x+c)^m*(a+a*sin(f*x+e))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{(dx+c)^{m+1}a^{2}}{d(m+1)}+\frac{a^{2}e^{\left(m\log(dx+c)+\log(dx+c)\right)}-\left(a^{2}dm+a^{2}d\right)\int (dx+c)^{m}\cos\left(2\,fx+2\,e\right)\,dx+4\left(a^{2}dm+a^{2}d\right)\int (dx+}{2\,(dm+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] (d*x + c)^(m + 1)*a^2/(d*(m + 1)) + 1/2*(a^2*e^(m*log(d*x + c) + log(d*x +
c)) - (a^2*d*m + a^2*d)*integrate((d*x + c)^m*cos(2*f*x + 2*e), x) + 4*(a^2
*d*m + a^2*d)*integrate((d*x + c)^m*sin(f*x + e), x))/(d*m + d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a+a\,\sin\left(e+f\,x\right)\right)}^2\,{\left(c+d\,x\right)}^m \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(e + f*x))^2*(c + d*x)^m,x)
```

```
[Out] int((a + a*sin(e + f*x))^2*(c + d*x)^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$a^{2}\left(\int 2\,(c+dx)^{m}\sin\left(e+fx\right)dx+\int (c+dx)^{m}\sin^{2}\left(e+fx\right)dx+\int (c+dx)^{m}\,dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+a*sin(f*x+e))**2,x)
```

```
[Out] a**2*(Integral(2*(c + d*x)**m*sin(e + f*x), x) + Integral((c + d*x)**m*sin(
e + f*x)**2, x) + Integral((c + d*x)**m, x))
```

3.148 $\int (c+dx)^m(a+a\sin(e+fx))\,dx$

Optimal. Leaf size=148

$$-\frac{ae^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right)}{2f}-\frac{ae^{-i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{if(c+dx)}{d}\right)}{2f}+\frac{a(c+}{d(m}$$

```
[Out] a*(d*x+c)^(1+m)/d/(1+m)-1/2*a*exp(I*(e-c*f/d))*(d*x+c)^m*GAMMA(1+m,-I*f*(d*
x+c)/d)/f/((-I*f*(d*x+c)/d)^m)-1/2*a*(d*x+c)^m*GAMMA(1+m,I*f*(d*x+c)/d)/exp
(I*(e-c*f/d))/f/((I*f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.14, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3317, 3308, 2181}

$$-\frac{ae^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{if(c+dx)}{d}\right)}{2f}-\frac{ae^{-i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(\frac{if(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,\frac{i}{}\right.}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + a*Sin[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^(1 + m))/(d*(1 + m)) - (a*E^(I*(e - (c*f)/d))*(c + d*x)^m*Gamm
a[1 + m, ((-I)*f*(c + d*x))/d])/(2*f*(((-I)*f*(c + d*x))/d)^m) - (a*(c + d*
x)^m*Gamma[1 + m, (I*f*(c + d*x))/d])/(2*E^(I*(e - (c*f)/d))*f*((I*f*(c + d
*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] && !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}\int (c+dx)^m(a+a\sin(e+fx))\,dx &= \int \left(a(c+dx)^m + a(c+dx)^m\sin(e+fx)\right)dx\\ &= \frac{a(c+dx)^{1+m}}{d(1+m)} + a\int (c+dx)^m\sin(e+fx)\,dx\\ &= \frac{a(c+dx)^{1+m}}{d(1+m)} + \frac{1}{2}(ia)\int e^{-i(e+fx)}(c+dx)^m\,dx - \frac{1}{2}(ia)\int e^{i(e+fx)}(c+dx)^m\,dx\\ &= \frac{a(c+dx)^{1+m}}{d(1+m)} - \frac{ae^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{if(c+dx)}{d}\right)}{2f} - \frac{ae^{-i\left(e-\right.}}{}\end{aligned}$$

Mathematica [A] time = 2.93, size = 199, normalized size = 1.34

$$-\frac{a(c+dx)^m(\sin(e+fx)+1)\left(d(m+1)\left(-\frac{if(c+dx)}{d}\right)^{-m}\left(\cos\left(e-\frac{cf}{d}\right)+i\sin\left(e-\frac{cf}{d}\right)\right)\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right)+d(m+}{2df(m+1)\left(\sin\left(\frac{1}{2}(e+fx)\right)+\cos\left(\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + a*Sin[e + f*x]),x]
```

```
[Out] -1/2*(a*(c + d*x)^m*(2*d*e - 2*c*f - 2*d*(e + f*x) + (d*(1 + m)*Gamma[1 + m
, (I*f*(c + d*x))/d]*(Cos[e - (c*f)/d] - I*Sin[e - (c*f)/d]))/((I*f*(c + d*
x))/d)^m + (d*(1 + m)*Gamma[1 + m, ((-I)*f*(c + d*x))/d]*(Cos[e - (c*f)/d]
+ I*Sin[e - (c*f)/d]))/(((-I)*f*(c + d*x))/d)^m)*(1 + Sin[e + f*x]))/(d*f*(
1 + m)*(Cos[(e + f*x)/2] + Sin[(e + f*x)/2])^2)
```

fricas [A] time = 0.68, size = 136, normalized size = 0.92

$$-\frac{(adm+ad)e^{\left(-\frac{dm\log\left(\frac{if}{d}\right)+ide-icf}{d}\right)}\Gamma\left(m+1,\frac{idfx+icf}{d}\right)+(adm+ad)e^{\left(-\frac{dm\log\left(-\frac{if}{d}\right)-ide+icf}{d}\right)}\Gamma\left(m+1,\frac{-idfx-icf}{d}\right)-2\left(adfx\right.}{2\left(dfm+df\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] -1/2*((a*d*m + a*d)*e^(-(d*m*log(I*f/d) + I*d*e - I*c*f)/d)*gamma(m + 1, (I
*d*f*x + I*c*f)/d) + (a*d*m + a*d)*e^(-(d*m*log(-I*f/d) - I*d*e + I*c*f)/d)
*gamma(m + 1, (-I*d*f*x - I*c*f)/d) - 2*(a*d*f*x + a*c*f)*(d*x + c)^m)/(d*f
*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a \sin\left(fx + e\right) + a\right)(dx + c)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((a*sin(f*x + e) + a)*(d*x + c)^m, x)
```

maple [F] time = 0.13, size = 0, normalized size = 0.00

$$\int (dx + c)^{m} \left(a + a \sin\left(fx + e\right)\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+a*sin(f*x+e)),x)
```

```
[Out] int((d*x+c)^m*(a+a*sin(f*x+e)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$a \int (dx + c)^{m} \sin\left(fx + e\right)\, dx + \frac{(dx + c)^{m+1} a}{d(m + 1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+a*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] a*integrate((d*x + c)^m*sin(f*x + e), x) + (d*x + c)^(m + 1)*a/(d*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a + a\, \sin\left(e + f\, x\right)\right)\, (c + d\, x)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + a*sin(e + f*x))*(c + d*x)^m,x)
```

```
[Out] int((a + a*sin(e + f*x))*(c + d*x)^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$a\left(\int (c+dx)^m \sin\left(e+fx\right)dx + \int (c+dx)^m\, dx\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+a*sin(f*x+e)),x)
[Out] a*(Integral((c + d*x)**m*sin(e + f*x), x) + Integral((c + d*x)**m, x))
```

3.149 $\int \frac{(c+dx)^m}{a+a\sin(e+fx)}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{(c+dx)^m}{a\sin(e+fx)+a},x\right)$$

```
[Out] Unintegrable((d*x+c)^m/(a+a*sin(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(c+dx)^m}{a+a\sin(e+fx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m/(a + a*Sin[e + f*x]),x]
[Out] Defer[Int][(c + d*x)^m/(a + a*Sin[e + f*x]), x]
```

Rubi steps

$$\int \frac{(c+dx)^m}{a+a\sin(e+fx)}\,dx=\int \frac{(c+dx)^m}{a+a\sin(e+fx)}\,dx$$

Mathematica [A] time = 0.92, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{a+a\sin(e+fx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m/(a + a*Sin[e + f*x]),x]
[Out] Integrate[(c + d*x)^m/(a + a*Sin[e + f*x]), x]
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(dx+c)^m}{a\sin\left(fx+e\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+a*sin(f*x+e)),x, algorithm="fricas")
[Out] integral((d*x + c)^m/(a*sin(f*x + e) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{a\sin\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+a*sin(f*x+e)),x, algorithm="giac")
[Out] integrate((d*x + c)^m/(a*sin(f*x + e) + a), x)
```

maple [A] time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{a+a\sin\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m/(a+a*sin(f*x+e)),x)
[Out] int((d*x+c)^m/(a+a*sin(f*x+e)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{a\sin\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+a*sin(f*x+e)),x, algorithm="maxima")
[Out] integrate((d*x + c)^m/(a*sin(f*x + e) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(c+d\,x)^m}{a+a\,\sin\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/(a + a*sin(e + f*x)),x)
[Out] int((c + d*x)^m/(a + a*sin(e + f*x)), x)
```

<u>**sympy**</u> **[A]** time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(c+dx)^m}{\sin(e+fx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m/(a+a*sin(f*x+e)),x)
```

```
[Out] Integral((c + d*x)**m/(sin(e + f*x) + 1), x)/a
```

3.150 $\int \frac{(c+dx)^m}{(a+a\sin(e+fx))^2}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{(c+dx)^m}{(a\sin(e+fx)+a)^2},x\right)$$

```
[Out] Unintegrable((d*x+c)^m/(a+a*sin(f*x+e))^2,x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(c+dx)^m}{(a+a\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m/(a + a*Sin[e + f*x])^2,x]
```

```
[Out] Defer[Int][(c + d*x)^m/(a + a*Sin[e + f*x])^2, x]
```

Rubi steps

$$\int \frac{(c+dx)^m}{(a+a\sin(e+fx))^2}\,dx=\int \frac{(c+dx)^m}{(a+a\sin(e+fx))^2}\,dx$$

Mathematica [A] time = 11.22, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{(a+a\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m/(a + a*Sin[e + f*x])^2,x]
```

```
[Out] Integrate[(c + d*x)^m/(a + a*Sin[e + f*x])^2, x]
```

fricas [A] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{(dx+c)^m}{a^2\cos\left(fx+e\right)^2-2\,a^2\sin\left(fx+e\right)-2\,a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+a*sin(f*x+e))^2,x, algorithm="fricas")
[Out] integral(-(d*x + c)^m/(a^2*cos(f*x + e)^2 - 2*a^2*sin(f*x + e) - 2*a^2), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(a\sin\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+a*sin(f*x+e))^2,x, algorithm="giac")
[Out] integrate((d*x + c)^m/(a*sin(f*x + e) + a)^2, x)
```

maple [A] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(a+a\sin\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m/(a+a*sin(f*x+e))^2,x)
[Out] int((d*x+c)^m/(a+a*sin(f*x+e))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(a\sin\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+a*sin(f*x+e))^2,x, algorithm="maxima")
[Out] integrate((d*x + c)^m/(a*sin(f*x + e) + a)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(c+d\,x)^m}{\left(a+a\,\sin\left(e+f\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/(a + a*sin(e + f*x))^2,x)
```

```
[Out] int((c + d*x)^m/(a + a*sin(e + f*x))^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(c+dx)^m}{\sin^2(e+fx)+2\sin(e+fx)+1}\,dx}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m/(a+a*sin(f*x+e))**2,x)
[Out] Integral((c + d*x)**m/(sin(e + f*x)**2 + 2*sin(e + f*x) + 1), x)/a**2
```

3.151 $\int (c+dx)^3(a+b\sin(e+fx))\,dx$

Optimal. Leaf size=90

$$\frac{a(c+dx)^4}{4d}+\frac{6bd^2(c+dx)\cos(e+fx)}{f^3}+\frac{3bd(c+dx)^2\sin(e+fx)}{f^2}-\frac{b(c+dx)^3\cos(e+fx)}{f}-\frac{6bd^3\sin(e+fx)}{f^4}$$

```
[Out] 1/4*a*(d*x+c)^4/d+6*b*d^2*(d*x+c)*cos(f*x+e)/f^3-b*(d*x+c)^3*cos(f*x+e)/f-6
*b*d^3*sin(f*x+e)/f^4+3*b*d*(d*x+c)^2*sin(f*x+e)/f^2
```

Rubi [A] time = 0.12, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3317, 3296, 2637}

$$\frac{a(c+dx)^4}{4d}+\frac{6bd^2(c+dx)\cos(e+fx)}{f^3}+\frac{3bd(c+dx)^2\sin(e+fx)}{f^2}-\frac{b(c+dx)^3\cos(e+fx)}{f}-\frac{6bd^3\sin(e+fx)}{f^4}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*(a + b*Sin[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^4)/(4*d) + (6*b*d^2*(c + d*x)*Cos[e + f*x])/f^3 - (b*(c + d*x)
^3*Cos[e + f*x])/f - (6*b*d^3*Sin[e + f*x])/f^4 + (3*b*d*(c + d*x)^2*Sin[e
+ f*x])/f^2
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^3(a+b\sin(e+fx))\,dx = \int \left(a(c+dx)^3+b(c+dx)^3\sin(e+fx)\right)\,dx$$
$$= \frac{a(c+dx)^4}{4d}+b\int (c+dx)^3\sin(e+fx)\,dx$$
$$= \frac{a(c+dx)^4}{4d}-\frac{b(c+dx)^3\cos(e+fx)}{f}+\frac{(3bd)\int (c+dx)^2\cos(e+fx)\,dx}{f}$$
$$= \frac{a(c+dx)^4}{4d}-\frac{b(c+dx)^3\cos(e+fx)}{f}+\frac{3bd(c+dx)^2\sin(e+fx)}{f^2}-\frac{\left(6bd^2\right)\int (c$$
$$= \frac{a(c+dx)^4}{4d}+\frac{6bd^2(c+dx)\cos(e+fx)}{f^3}-\frac{b(c+dx)^3\cos(e+fx)}{f}+\frac{3bd(c+dx$$
$$= \frac{a(c+dx)^4}{4d}+\frac{6bd^2(c+dx)\cos(e+fx)}{f^3}-\frac{b(c+dx)^3\cos(e+fx)}{f}-\frac{6bd^3\sin(e}{f^4}$$

Mathematica [A] time = 0.51, size = 124, normalized size = 1.38

$$\frac{1}{4}ax\left(4c^3+6c^2dx+4cd^2x^2+d^3x^3\right)+\frac{3bd\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2-2\right)\right)\sin(e+fx)}{f^4}-\frac{b(c+dx)\left(c^2f^2+2cdf^2x$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3*(a + b*Sin[e + f*x]),x]
```

```
[Out] (a*x*(4*c^3 + 6*c^2*d*x + 4*c*d^2*x^2 + d^3*x^3))/4 - (b*(c + d*x)*(c^2*f^2
 + 2*c*d*f^2*x + d^2*(-6 + f^2*x^2))*Cos[e + f*x])/f^3 + (3*b*d*(c^2*f^2 +
2*c*d*f^2*x + d^2*(-2 + f^2*x^2))*Sin[e + f*x])/f^4
```

fricas [A] time = 0.72, size = 168, normalized size = 1.87

$$\frac{ad^3f^4x^4+4\,acd^2f^4x^3+6\,ac^2df^4x^2+4\,ac^3f^4x-4\left(bd^3f^3x^3+3\,bcd^2f^3x^2+bc^3f^3-6\,bcd^2f+3\left(bc^2df^3-2\,bd^3\right.\right.}{4\,f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/4*(a*d^3*f^4*x^4 + 4*a*c*d^2*f^4*x^3 + 6*a*c^2*d*f^4*x^2 + 4*a*c^3*f^4*x
- 4*(b*d^3*f^3*x^3 + 3*b*c*d^2*f^3*x^2 + b*c^3*f^3 - 6*b*c*d^2*f + 3*(b*c^2
*d*f^3 - 2*b*d^3*f)*x)*cos(f*x + e) + 12*(b*d^3*f^2*x^2 + 2*b*c*d^2*f^2*x +
 b*c^2*d*f^2 - 2*b*d^3)*sin(f*x + e))/f^4
```

giac [A] time = 0.39, size = 157, normalized size = 1.74

$$\frac{1}{4}\,ad^3x^4+acd^2x^3+\frac{3}{2}\,ac^2dx^2+ac^3x-\frac{\left(bd^3f^3x^3+3\,bcd^2f^3x^2+3\,bc^2df^3x+bc^3f^3-6\,bd^3fx-6\,bcd^2f\right)\cos\left(fx+e\right.}{f^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] 1/4*a*d^3*x^4 + a*c*d^2*x^3 + 3/2*a*c^2*d*x^2 + a*c^3*x - (b*d^3*f^3*x^3 +
3*b*c*d^2*f^3*x^2 + 3*b*c^2*d*f^3*x + b*c^3*f^3 - 6*b*d^3*f*x - 6*b*c*d^2*f
)*cos(f*x + e)/f^4 + 3*(b*d^3*f^2*x^2 + 2*b*c*d^2*f^2*x + b*c^2*d*f^2 - 2*b
*d^3)*sin(f*x + e)/f^4
```

maple [B] time = 0.03, size = 482, normalized size = 5.36

$$\frac{\frac{a\,d^3\left(fx+e\right)^4}{4f^3}+\frac{ac\,d^2\left(fx+e\right)^3}{f^2}-\frac{a\,d^3e\left(fx+e\right)^3}{f^3}+\frac{3a\,c^2d\left(fx+e\right)^2}{2f}-\frac{3ac\,d^2e\left(fx+e\right)^2}{f^2}+\frac{3a\,d^3e^2\left(fx+e\right)^2}{2f^3}+a\,c^3\left(fx+e\right)-\frac{3a\,c^2de\left(fx+e\right)}{f}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*(a+b*sin(f*x+e)),x)
```

```
[Out] 1/f*(1/4*a/f^3*d^3*(f*x+e)^4+a/f^2*c*d^2*(f*x+e)^3-a/f^3*d^3*e*(f*x+e)^3+3/
2*a/f*c^2*d*(f*x+e)^2-3*a/f^2*c*d^2*e*(f*x+e)^2+3/2*a/f^3*d^3*e^2*(f*x+e)^2
+a*c^3*(f*x+e)-3*a/f*c^2*d*e*(f*x+e)+3*a/f^2*c*d^2*e^2*(f*x+e)-a/f^3*d^3*e^
3*(f*x+e)+1/f^3*b*d^3*(-(f*x+e)^3*cos(f*x+e)+3*(f*x+e)^2*sin(f*x+e)-6*sin(f
*x+e)+6*(f*x+e)*cos(f*x+e))+3/f^2*b*c*d^2*(-(f*x+e)^2*cos(f*x+e)+2*cos(f*x+
e)+2*(f*x+e)*sin(f*x+e))-3/f^3*b*d^3*e*(-(f*x+e)^2*cos(f*x+e)+2*cos(f*x+e)+
2*(f*x+e)*sin(f*x+e))+3/f*b*c^2*d*(sin(f*x+e)-(f*x+e)*cos(f*x+e))-6/f^2*b*c
*d^2*e*(sin(f*x+e)-(f*x+e)*cos(f*x+e))+3/f^3*b*d^3*e^2*(sin(f*x+e)-(f*x+e)*
cos(f*x+e))-b*c^3*cos(f*x+e)+3/f*b*c^2*d*e*cos(f*x+e)-3/f^2*b*c*d^2*e^2*cos
(f*x+e)+1/f^3*b*d^3*e^3*cos(f*x+e))
```

maxima [B] time = 0.43, size = 462, normalized size = 5.13

$$\frac{4\left(fx+e\right)ac^3+\frac{\left(fx+e\right)^4ad^3}{f^3}-\frac{4\left(fx+e\right)^3ad^3e}{f^3}+\frac{6\left(fx+e\right)^2ad^3e^2}{f^3}-\frac{4\left(fx+e\right)ad^3e^3}{f^3}+\frac{4\left(fx+e\right)^3acd^2}{f^2}-\frac{12\left(fx+e\right)^2acd^2e}{f^2}+\frac{12\left(fx+e\right)acd^2}{f^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/4*(4*(f*x + e)*a*c^3 + (f*x + e)^4*a*d^3/f^3 - 4*(f*x + e)^3*a*d^3*e/f^3
+ 6*(f*x + e)^2*a*d^3*e^2/f^3 - 4*(f*x + e)*a*d^3*e^3/f^3 + 4*(f*x + e)^3*a
*c*d^2/f^2 - 12*(f*x + e)^2*a*c*d^2*e/f^2 + 12*(f*x + e)*a*c*d^2*e^2/f^2 +
6*(f*x + e)^2*a*c^2*d/f - 12*(f*x + e)*a*c^2*d*e/f - 4*b*c^3*cos(f*x + e) +
 4*b*d^3*e^3*cos(f*x + e)/f^3 - 12*b*c*d^2*e^2*cos(f*x + e)/f^2 + 12*b*c^2*
d*e*cos(f*x + e)/f - 12*((f*x + e)*cos(f*x + e) - sin(f*x + e))*b*d^3*e^2/f
^3 + 24*((f*x + e)*cos(f*x + e) - sin(f*x + e))*b*c*d^2*e/f^2 - 12*((f*x +
e)*cos(f*x + e) - sin(f*x + e))*b*c^2*d/f + 12*(((f*x + e)^2 - 2)*cos(f*x +
 e) - 2*(f*x + e)*sin(f*x + e))*b*d^3*e/f^3 - 12*(((f*x + e)^2 - 2)*cos(f*x
 + e) - 2*(f*x + e)*sin(f*x + e))*b*c*d^2/f^2 - 4*(((f*x + e)^3 - 6*f*x - 6
*e)*cos(f*x + e) - 3*((f*x + e)^2 - 2)*sin(f*x + e))*b*d^3/f^3)/f
```

mupad [B] time = 0.80, size = 191, normalized size = 2.12

$$\frac{a\,d^3\,x^4}{4}-\frac{3\,\sin\left(e+f\,x\right)\,\left(2\,b\,d^3-b\,c^2\,d\,f^2\right)}{f^4}-\frac{\cos\left(e+f\,x\right)\,\left(b\,c^3\,f^2-6\,b\,c\,d^2\right)}{f^3}+a\,c^3\,x+\frac{3\,x\,\cos\left(e+f\,x\right)\,\left(2\,b\,d^3-b\right.}{f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))*(c + d*x)^3,x)
```

```
[Out] (a*d^3*x^4)/4 - (3*sin(e + f*x)*(2*b*d^3 - b*c^2*d*f^2))/f^4 - (cos(e + f*x
)*(b*c^3*f^2 - 6*b*c*d^2))/f^3 + a*c^3*x + (3*x*cos(e + f*x)*(2*b*d^3 - b*c
^2*d*f^2))/f^3 + (3*a*c^2*d*x^2)/2 + a*c*d^2*x^3 - (b*d^3*x^3*cos(e + f*x))
/f + (3*b*d^3*x^2*sin(e + f*x))/f^2 + (6*b*c*d^2*x*sin(e + f*x))/f^2 - (3*b
*c*d^2*x^2*cos(e + f*x))/f
```

sympy [A] time = 1.86, size = 264, normalized size = 2.93

$$\begin{cases} ac^3x + \frac{3ac^2dx^2}{2} + acd^2x^3 + \frac{ad^3x^4}{4} - \frac{bc^3\cos\left(e+fx\right)}{f} - \frac{3bc^2dx\cos\left(e+fx\right)}{f} + \frac{3bc^2d\sin\left(e+fx\right)}{f^2} - \frac{3bcd^2x^2\cos\left(e+fx\right)}{f} + \frac{6bcd^2x\sin\left(e+fx\right)}{f^2} \\ \left(a+b\sin\left(e\right)\right)\left(c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*(a+b*sin(f*x+e)),x)
```

```
[Out] Piecewise((a*c**3*x + 3*a*c**2*d*x**2/2 + a*c*d**2*x**3 + a*d**3*x**4/4 - b
*c**3*cos(e + f*x)/f - 3*b*c**2*d*x*cos(e + f*x)/f + 3*b*c**2*d*sin(e + f*x
)/f**2 - 3*b*c*d**2*x**2*cos(e + f*x)/f + 6*b*c*d**2*x*sin(e + f*x)/f**2 +
6*b*c*d**2*cos(e + f*x)/f**3 - b*d**3*x**3*cos(e + f*x)/f + 3*b*d**3*x**2*s
in(e + f*x)/f**2 + 6*b*d**3*x*cos(e + f*x)/f**3 - 6*b*d**3*sin(e + f*x)/f**
4, Ne(f, 0)), ((a + b*sin(e))*(c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3 + d**
3*x**4/4), True))
```

3.152 $\int (c+dx)^2(a+b\sin(e+fx))\,dx$

Optimal. Leaf size=68

$$\frac{a(c+dx)^3}{3d}+\frac{2bd(c+dx)\sin(e+fx)}{f^2}-\frac{b(c+dx)^2\cos(e+fx)}{f}+\frac{2bd^2\cos(e+fx)}{f^3}$$

```
[Out] 1/3*a*(d*x+c)^3/d+2*b*d^2*cos(f*x+e)/f^3-b*(d*x+c)^2*cos(f*x+e)/f+2*b*d*(d*
x+c)*sin(f*x+e)/f^2
```

Rubi [A] time = 0.09, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3317, 3296, 2638}

$$\frac{a(c+dx)^3}{3d}+\frac{2bd(c+dx)\sin(e+fx)}{f^2}-\frac{b(c+dx)^2\cos(e+fx)}{f}+\frac{2bd^2\cos(e+fx)}{f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*(a + b*Sin[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^3)/(3*d) + (2*b*d^2*Cos[e + f*x])/f^3 - (b*(c + d*x)^2*Cos[e +
 f*x])/f + (2*b*d*(c + d*x)*Sin[e + f*x])/f^2
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}
\int (c+dx)^2(a+b\sin(e+fx))\,dx &= \int \left(a(c+dx)^2+b(c+dx)^2\sin(e+fx)\right)\,dx \\
&= \frac{a(c+dx)^3}{3d}+b\int (c+dx)^2\sin(e+fx)\,dx \\
&= \frac{a(c+dx)^3}{3d}-\frac{b(c+dx)^2\cos(e+fx)}{f}+\frac{(2bd)\int (c+dx)\cos(e+fx)\,dx}{f} \\
&= \frac{a(c+dx)^3}{3d}-\frac{b(c+dx)^2\cos(e+fx)}{f}+\frac{2bd(c+dx)\sin(e+fx)}{f^2}-\frac{\left(2bd^2\right)\int \sin
\end{aligned}$$

$$= \frac{a(c+dx)^3}{3d}+\frac{2bd^2\cos(e+fx)}{f^3}-\frac{b(c+dx)^2\cos(e+fx)}{f}+\frac{2bd(c+dx)\sin(e}{f^2}$$

Mathematica [A] time = 0.36, size = 84, normalized size = 1.24

$$\frac{1}{3}ax\left(3c^2+3cdx+d^2x^2\right)-\frac{b\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2-2\right)\right)\cos(e+fx)}{f^3}+\frac{2bd(c+dx)\sin(e+fx)}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*(a + b*Sin[e + f*x]),x]
```

```
[Out] (a*x*(3*c^2 + 3*c*d*x + d^2*x^2))/3 - (b*(c^2*f^2 + 2*c*d*f^2*x + d^2*(-2 +
 f^2*x^2))*Cos[e + f*x])/f^3 + (2*b*d*(c + d*x)*Sin[e + f*x])/f^2
```

fricas [A] time = 0.68, size = 102, normalized size = 1.50

$$\frac{ad^2f^3x^3+3\,acdf^3x^2+3\,ac^2f^3x-3\left(bd^2f^2x^2+2\,bcdf^2x+bc^2f^2-2\,bd^2\right)\cos\left(fx+e\right)+6\left(bd^2fx+bcdf\right)\sin\left(f\right.}{3\,f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] 1/3*(a*d^2*f^3*x^3 + 3*a*c*d*f^3*x^2 + 3*a*c^2*f^3*x - 3*(b*d^2*f^2*x^2 + 2
*b*c*d*f^2*x + b*c^2*f^2 - 2*b*d^2)*cos(f*x + e) + 6*(b*d^2*f*x + b*c*d*f)*
sin(f*x + e))/f^3
```

giac [A] time = 0.36, size = 95, normalized size = 1.40

$$\frac{1}{3}\,ad^2x^3+acdx^2+ac^2x-\frac{\left(bd^2f^2x^2+2\,bcdf^2x+bc^2f^2-2\,bd^2\right)\cos\left(fx+e\right)}{f^3}+\frac{2\left(bd^2fx+bcdf\right)\sin\left(fx+e\right)}{f^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] 1/3*a*d^2*x^3 + a*c*d*x^2 + a*c^2*x - (b*d^2*f^2*x^2 + 2*b*c*d*f^2*x + b*c^
2*f^2 - 2*b*d^2)*cos(f*x + e)/f^3 + 2*(b*d^2*f*x + b*c*d*f)*sin(f*x + e)/f^
3
```

maple [B] time = 0.02, size = 241, normalized size = 3.54

$$\frac{\frac{a d^2 (fx+e)^3}{3f^2} + \frac{acd(fx+e)^2}{f} - \frac{a d^2 e (fx+e)^2}{f^2} + a c^2 \left(fx+e\right) - \frac{2acde(fx+e)}{f} + \frac{a d^2 e^2 (fx+e)}{f^2} + \frac{b d^2\left(-(fx+e)^2\cos(fx+e)+2\cos(fx+e)+2(\right.}{f^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*(a+b*sin(f*x+e)),x)
```

```
[Out] 1/f*(1/3*a/f^2*d^2*(f*x+e)^3+a/f*c*d*(f*x+e)^2-a/f^2*d^2*e*(f*x+e)^2+a*c^2*
(f*x+e)-2*a/f*c*d*e*(f*x+e)+a/f^2*d^2*e^2*(f*x+e)+1/f^2*b*d^2*(-(f*x+e)^2*c
os(f*x+e)+2*cos(f*x+e)+2*(f*x+e)*sin(f*x+e))+2/f*b*c*d*(sin(f*x+e)-(f*x+e)*
cos(f*x+e))-2/f^2*b*d^2*e*(sin(f*x+e)-(f*x+e)*cos(f*x+e))-b*c^2*cos(f*x+e)+
2/f*b*c*d*e*cos(f*x+e)-1/f^2*b*d^2*e^2*cos(f*x+e))
```

maxima [B] time = 0.35, size = 239, normalized size = 3.51

$$\frac{3\left(fx+e\right)ac^2 + \frac{(fx+e)^3 ad^2}{f^2} - \frac{3(fx+e)^2 ad^2 e}{f^2} + \frac{3(fx+e)ad^2e^2}{f^2} + \frac{3(fx+e)^2 acd}{f} - \frac{6(fx+e)acde}{f} - 3\,bc^2\cos\left(fx+e\right) - \frac{3\,bd^2e^2\cos(}{f^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/3*(3*(f*x + e)*a*c^2 + (f*x + e)^3*a*d^2/f^2 - 3*(f*x + e)^2*a*d^2*e/f^2
+ 3*(f*x + e)*a*d^2*e^2/f^2 + 3*(f*x + e)^2*a*c*d/f - 6*(f*x + e)*a*c*d*e/f
 - 3*b*c^2*cos(f*x + e) - 3*b*d^2*e^2*cos(f*x + e)/f^2 + 6*b*c*d*e*cos(f*x
+ e)/f + 6*((f*x + e)*cos(f*x + e) - sin(f*x + e))*b*d^2*e/f^2 - 6*((f*x +
e)*cos(f*x + e) - sin(f*x + e))*b*c*d/f - 3*(((f*x + e)^2 - 2)*cos(f*x + e)
 - 2*(f*x + e)*sin(f*x + e))*b*d^2/f^2)/f
```

mupad [B] time = 0.67, size = 112, normalized size = 1.65

$$\frac{a\,d^2\,x^3}{3}+\frac{\cos\left(e+f\,x\right)\,\left(2\,b\,d^2-b\,c^2\,f^2\right)}{f^3}+a\,c^2\,x+a\,c\,d\,x^2+\frac{2\,b\,d^2\,x\,\sin\left(e+f\,x\right)}{f^2}-\frac{b\,d^2\,x^2\,\cos\left(e+f\,x\right)}{f}+\frac{2\,b\,c\,d\,\sin}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))*(c + d*x)^2,x)
```

```
[Out] (a*d^2*x^3)/3 + (cos(e + f*x)*(2*b*d^2 - b*c^2*f^2))/f^3 + a*c^2*x + a*c*d*
x^2 + (2*b*d^2*x*sin(e + f*x))/f^2 - (b*d^2*x^2*cos(e + f*x))/f + (2*b*c*d*
sin(e + f*x))/f^2 - (2*b*c*d*x*cos(e + f*x))/f
```

sympy [A] time = 0.81, size = 151, normalized size = 2.22

$$\begin{cases} ac^2x + acdx^2 + \frac{ad^2x^3}{3} - \frac{bc^2\cos\left(e+fx\right)}{f} - \frac{2bcdx\cos\left(e+fx\right)}{f} + \frac{2bcd\sin\left(e+fx\right)}{f^2} - \frac{bd^2x^2\cos\left(e+fx\right)}{f} + \frac{2bd^2x\sin\left(e+fx\right)}{f^2} + \frac{2bd^2\cos\left(e+fx\right)}{f^3} \\ (a + b\sin(e))\left(c^2x + cdx^2 + \frac{d^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*(a+b*sin(f*x+e)),x)
```

```
[Out] Piecewise((a*c**2*x + a*c*d*x**2 + a*d**2*x**3/3 - b*c**2*cos(e + f*x)/f -
2*b*c*d*x*cos(e + f*x)/f + 2*b*c*d*sin(e + f*x)/f**2 - b*d**2*x**2*cos(e +
f*x)/f + 2*b*d**2*x*sin(e + f*x)/f**2 + 2*b*d**2*cos(e + f*x)/f**3, Ne(f, 0
)), ((a + b*sin(e))*(c**2*x + c*d*x**2 + d**2*x**3/3), True))
```

3.153 $\int (c+dx)(a+b\sin(e+fx))\,dx$

Optimal. Leaf size=45

$$\frac{a(c+dx)^2}{2d}-\frac{b(c+dx)\cos(e+fx)}{f}+\frac{bd\sin(e+fx)}{f^2}$$

```
[Out] 1/2*a*(d*x+c)^2/d-b*(d*x+c)*cos(f*x+e)/f+b*d*sin(f*x+e)/f^2
```

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = {3317, 3296, 2637}

$$\frac{a(c+dx)^2}{2d}-\frac{b(c+dx)\cos(e+fx)}{f}+\frac{bd\sin(e+fx)}{f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*(a + b*Sin[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^2)/(2*d) - (b*(c + d*x)*Cos[e + f*x])/f + (b*d*Sin[e + f*x])/f
^2
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}\int (c+dx)(a+b\sin(e+fx))\,dx &= \int (a(c+dx)+b(c+dx)\sin(e+fx))\,dx\\ &= \frac{a(c+dx)^2}{2d}+b\int (c+dx)\sin(e+fx)\,dx\\ &= \frac{a(c+dx)^2}{2d}-\frac{b(c+dx)\cos(e+fx)}{f}+\frac{(bd)\int \cos(e+fx)\,dx}{f}\\ &= \frac{a(c+dx)^2}{2d}-\frac{b(c+dx)\cos(e+fx)}{f}+\frac{bd\sin(e+fx)}{f^2}\end{aligned}$$

Mathematica [A] time = 0.13, size = 43, normalized size = 0.96

$$\frac{1}{2}ax(2c+dx)-\frac{b(c+dx)\cos(e+fx)}{f}+\frac{bd\sin(e+fx)}{f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*(a + b*Sin[e + f*x]),x]
[Out] (a*x*(2*c + d*x))/2 - (b*(c + d*x)*Cos[e + f*x])/f + (b*d*Sin[e + f*x])/f^2
```

fricas [A] time = 0.69, size = 51, normalized size = 1.13

$$\frac{adf^2x^2+2\,acf^2x+2\,bd\sin\left(fx+e\right)-2\left(bdfx+bcf\right)\cos\left(fx+e\right)}{2\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sin(f*x+e)),x, algorithm="fricas")
[Out] 1/2*(a*d*f^2*x^2 + 2*a*c*f^2*x + 2*b*d*sin(f*x + e) - 2*(b*d*f*x + b*c*f)*c
os(f*x + e))/f^2
```

giac [A] time = 0.74, size = 47, normalized size = 1.04

$$\frac{1}{2}\,adx^2+acx+\frac{bd\sin\left(fx+e\right)}{f^2}-\frac{\left(bdfx+bcf\right)\cos\left(fx+e\right)}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sin(f*x+e)),x, algorithm="giac")
[Out] 1/2*a*d*x^2 + a*c*x + b*d*sin(f*x + e)/f^2 - (b*d*f*x + b*c*f)*cos(f*x + e)
/f^2
```

maple [B] time = 0.02, size = 90, normalized size = 2.00

$$\frac{\frac{ad\left(fx+e\right)^{2}}{2f}+ac\left(fx+e\right)-\frac{ade\left(fx+e\right)}{f}+\frac{bd\left(\sin\left(fx+e\right)-\left(fx+e\right)\cos\left(fx+e\right)\right)}{f}-cb\cos\left(fx+e\right)+\frac{bde\cos\left(fx+e\right)}{f}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*(a+b*sin(f*x+e)),x)
```

```
[Out] 1/f*(1/2*a/f*d*(f*x+e)^2+a*c*(f*x+e)-a/f*d*e*(f*x+e)+1/f*b*d*(sin(f*x+e)-(f
*x+e)*cos(f*x+e))-c*b*cos(f*x+e)+1/f*b*d*e*cos(f*x+e))
```

maxima [B] time = 0.35, size = 93, normalized size = 2.07

$$\frac{2\left(fx+e\right)ac+\frac{\left(fx+e\right)^{2}ad}{f}-\frac{2\left(fx+e\right)ade}{f}-2\,bc\cos\left(fx+e\right)+\frac{2\,bde\cos\left(fx+e\right)}{f}-\frac{2\left(\left(fx+e\right)\cos\left(fx+e\right)-\sin\left(fx+e\right)\right)bd}{f}}{2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] 1/2*(2*(f*x + e)*a*c + (f*x + e)^2*a*d/f - 2*(f*x + e)*a*d*e/f - 2*b*c*cos(
f*x + e) + 2*b*d*e*cos(f*x + e)/f - 2*((f*x + e)*cos(f*x + e) - sin(f*x + e
))*b*d/f)/f
```

mupad [B] time = 0.63, size = 50, normalized size = 1.11

$$a\,c\,x-\frac{f\,\left(b\,c\,\cos\left(e+f\,x\right)+b\,d\,x\,\cos\left(e+f\,x\right)\right)-b\,d\,\sin\left(e+f\,x\right)}{f^2}+\frac{a\,d\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))*(c + d*x),x)
```

```
[Out] a*c*x - (f*(b*c*cos(e + f*x) + b*d*x*cos(e + f*x)) - b*d*sin(e + f*x))/f^2
+ (a*d*x^2)/2
```

sympy [A] time = 0.31, size = 68, normalized size = 1.51

$$\begin{cases} acx+\frac{adx^{2}}{2}-\frac{bc\cos\left(e+fx\right)}{f}-\frac{bdx\cos\left(e+fx\right)}{f}+\frac{bd\sin\left(e+fx\right)}{f^{2}} & \text{for}\: f\neq 0 \\ \left(a+b\sin\left(e\right)\right)\left(cx+\frac{dx^{2}}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sin(f*x+e)),x)
```

```
[Out] Piecewise((a*c*x + a*d*x**2/2 - b*c*cos(e + f*x)/f - b*d*x*cos(e + f*x)/f +
 b*d*sin(e + f*x)/f**2, Ne(f, 0)), ((a + b*sin(e))*(c*x + d*x**2/2), True))
```

3.154 $\int \frac{a+b\sin(e+fx)}{c+dx}\,dx$

Optimal. Leaf size=64

$$\frac{a\log(c+dx)}{d}+\frac{b\text{Ci}\left(xf+\frac{cf}{d}\right)\sin\left(e-\frac{cf}{d}\right)}{d}+\frac{b\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d}$$

```
[Out] a*ln(d*x+c)/d+b*cos(-e+c*f/d)*Si(c*f/d+f*x)/d-b*Ci(c*f/d+f*x)*sin(-e+c*f/d)
/d
```

Rubi [A] time = 0.12, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3317, 3303, 3299, 3302}

$$\frac{a\log(c+dx)}{d}+\frac{b\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d}+\frac{b\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sin[e + f*x])/(c + d*x),x]
```

```
[Out] (a*Log[c + d*x])/d + (b*CosIntegral[(c*f)/d + f*x]*Sin[e - (c*f)/d])/d + (b
*Cos[e - (c*f)/d]*SinIntegral[(c*f)/d + f*x])/d
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin(e+fx)}{c+dx}\,dx &= \int \left(\frac{a}{c+dx}+\frac{b\sin(e+fx)}{c+dx}\right)dx \\
&= \frac{a\log(c+dx)}{d}+b\int \frac{\sin(e+fx)}{c+dx}\,dx \\
&= \frac{a\log(c+dx)}{d}+\left(b\cos\left(e-\frac{cf}{d}\right)\right)\int \frac{\sin\left(\frac{cf}{d}+fx\right)}{c+dx}\,dx+\left(b\sin\left(e-\frac{cf}{d}\right)\right)\int \frac{\cos\left(\frac{cf}{d}+f\right.}{c+dx} \\
&= \frac{a\log(c+dx)}{d}+\frac{b\text{Ci}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d}+\frac{b\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(\frac{cf}{d}+fx\right)}{d}
\end{aligned}$$

Mathematica [A] time = 0.16, size = 57, normalized size = 0.89

$$\frac{a\log(c+dx)+b\text{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\sin\left(e-\frac{cf}{d}\right)+b\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(f\left(\frac{c}{d}+x\right)\right)}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sin[e + f*x])/(c + d*x),x]
```

```
[Out] (a*Log[c + d*x] + b*CosIntegral[f*(c/d + x)]*Sin[e - (c*f)/d] + b*Cos[e - (
c*f)/d]*SinIntegral[f*(c/d + x)])/d
```

fricas [A] time = 0.86, size = 93, normalized size = 1.45

$$\frac{2\,b\cos\left(-\frac{de-cf}{d}\right)\text{Si}\left(\frac{dfx+cf}{d}\right)+2\,a\log\left(dx+c\right)-\left(b\,\text{Ci}\left(\frac{dfx+cf}{d}\right)+b\,\text{Ci}\left(-\frac{dfx+cf}{d}\right)\right)\sin\left(-\frac{de-cf}{d}\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b*cos(-(d*e - c*f)/d)*sin_integral((d*f*x + c*f)/d) + 2*a*log(d*x +
c) - (b*cos_integral((d*f*x + c*f)/d) + b*cos_integral(-(d*f*x + c*f)/d))*s
in(-(d*e - c*f)/d))/d
```

giac [C] time = 0.42, size = 712, normalized size = 11.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c),x, algorithm="giac")
```

```
[Out] 1/2*(b*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 -
 b*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*
a*log(abs(d*x + c))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*b*sin_integral((d*f*x
 + c*f)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*b*real_part(cos_integral(f*x +
 c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e) - 2*b*real_part(cos_integral(-f*x - c*
f/d))*tan(1/2*c*f/d)^2*tan(1/2*e) + 2*b*real_part(cos_integral(f*x + c*f/d)
)*tan(1/2*c*f/d)*tan(1/2*e)^2 + 2*b*real_part(cos_integral(-f*x - c*f/d))*t
an(1/2*c*f/d)*tan(1/2*e)^2 - b*imag_part(cos_integral(f*x + c*f/d))*tan(1/2
*c*f/d)^2 + b*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2 + 2*a*
log(abs(d*x + c))*tan(1/2*c*f/d)^2 - 2*b*sin_integral((d*f*x + c*f)/d)*tan(
1/2*c*f/d)^2 + 4*b*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(
1/2*e) - 4*b*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e
) + 8*b*sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/2*e) - b*imag_pa
rt(cos_integral(f*x + c*f/d))*tan(1/2*e)^2 + b*imag_part(cos_integral(-f*x
- c*f/d))*tan(1/2*e)^2 + 2*a*log(abs(d*x + c))*tan(1/2*e)^2 - 2*b*sin_integ
ral((d*f*x + c*f)/d)*tan(1/2*e)^2 - 2*b*real_part(cos_integral(f*x + c*f/d)
)*tan(1/2*c*f/d) - 2*b*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)
 + 2*b*real_part(cos_integral(f*x + c*f/d))*tan(1/2*e) + 2*b*real_part(cos_
integral(-f*x - c*f/d))*tan(1/2*e) + b*imag_part(cos_integral(f*x + c*f/d))
 - b*imag_part(cos_integral(-f*x - c*f/d)) + 2*a*log(abs(d*x + c)) + 2*b*si
n_integral((d*f*x + c*f)/d))/(d*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + d*tan(1/2*c
*f/d)^2 + d*tan(1/2*e)^2 + d)
```

maple [A] time = 0.02, size = 96, normalized size = 1.50

$$\frac{a\ln\left(\left(fx+e\right)d+cf-de\right)}{d}+\frac{b\,\mathrm{Si}\left(fx+e+\frac{cf-de}{d}\right)\cos\left(\frac{cf-de}{d}\right)}{d}-\frac{b\,\mathrm{Ci}\left(fx+e+\frac{cf-de}{d}\right)\sin\left(\frac{cf-de}{d}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sin(f*x+e))/(d*x+c),x)
```

```
[Out] a*ln((f*x+e)*d+c*f-d*e)/d+b*Si(f*x+e+(c*f-d*e)/d)*cos((c*f-d*e)/d)/d-b*Ci(f
*x+e+(c*f-d*e)/d)*sin((c*f-d*e)/d)/d
```

maxima [C] time = 0.60, size = 171, normalized size = 2.67

$$\frac{\frac{2\,af\log\left(c+\frac{(fx+e)d}{f}-\frac{de}{f}\right)}{d}+\frac{\left(f\left(-i\,E_1\left(\frac{i(fx+e)d-i\,de+i\,cf}{d}\right)+i\,E_1\left(-\frac{i(fx+e)d-i\,de+i\,cf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f\left(E_1\left(\frac{i(fx+e)d-i\,de+i\,cf}{d}\right)+E_1\left(-\frac{i(fx+e)d-i\,de+i\,cf}{d}\right)\right)\sin(}{d}}{2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c),x, algorithm="maxima")
```

```
[Out] 1/2*(2*a*f*log(c + (f*x + e)*d/f - d*e/f)/d + (f*(-I*exp_integral_e(1, (I*(
f*x + e)*d - I*d*e + I*c*f)/d) + I*exp_integral_e(1, -(I*(f*x + e)*d - I*d*
e + I*c*f)/d))*cos(-(d*e - c*f)/d) + f*(exp_integral_e(1, (I*(f*x + e)*d -
I*d*e + I*c*f)/d) + exp_integral_e(1, -(I*(f*x + e)*d - I*d*e + I*c*f)/d))*
sin(-(d*e - c*f)/d))*b/d)/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{a+b\,\sin\left(e+f\,x\right)}{c+d\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))/(c + d*x),x)
```

```
[Out] int((a + b*sin(e + f*x))/(c + d*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\sin\left(e+fx\right)}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c),x)
```

```
[Out] Integral((a + b*sin(e + f*x))/(c + d*x), x)
```

3.155 $\int \frac{a+b\sin(e+fx)}{(c+dx)^2}\,dx$

Optimal. Leaf size=88

$$-\frac{a}{d(c+dx)}+\frac{bf\text{Ci}\left(xf+\frac{cf}{d}\right)\cos\left(e-\frac{cf}{d}\right)}{d^2}-\frac{bf\sin\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{b\sin(e+fx)}{d(c+dx)}$$

```
[Out] -a/d/(d*x+c)+b*f*Ci(c*f/d+f*x)*cos(-e+c*f/d)/d^2+b*f*Si(c*f/d+f*x)*sin(-e+c
*f/d)/d^2-b*sin(f*x+e)/d/(d*x+c)
```

Rubi [A] time = 0.16, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3317, 3297, 3303, 3299, 3302}

$$-\frac{a}{d(c+dx)}+\frac{bf\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\cos\left(e-\frac{cf}{d}\right)}{d^2}-\frac{bf\sin\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{b\sin(e+fx)}{d(c+dx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sin[e + f*x])/(c + d*x)^2,x]
```

```
[Out] -(a/(d*(c + d*x))) + (b*f*Cos[e - (c*f)/d]*CosIntegral[(c*f)/d + f*x])/d^2
- (b*Sin[e + f*x])/(d*(c + d*x)) - (b*f*Sin[e - (c*f)/d]*SinIntegral[(c*f)/
d + f*x])/d^2
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\sin(e+fx)}{(c+dx)^2}\,dx &= \int \left(\frac{a}{(c+dx)^2}+\frac{b\sin(e+fx)}{(c+dx)^2}\right)dx \\
&= -\frac{a}{d(c+dx)}+b\int \frac{\sin(e+fx)}{(c+dx)^2}\,dx \\
&= -\frac{a}{d(c+dx)}-\frac{b\sin(e+fx)}{d(c+dx)}+\frac{(bf)\int \frac{\cos(e+fx)}{c+dx}\,dx}{d} \\
&= -\frac{a}{d(c+dx)}-\frac{b\sin(e+fx)}{d(c+dx)}+\frac{\left(bf\cos\left(e-\frac{cf}{d}\right)\right)\int \frac{\cos\left(\frac{cf}{d}+fx\right)}{c+dx}\,dx}{d}-\frac{\left(bf\sin\left(e-\frac{cf}{d}\right)\right)\int \frac{\sin \cdots}{\cdots}}{d} \\
&= -\frac{a}{d(c+dx)}+\frac{bf\cos\left(e-\frac{cf}{d}\right)\text{Ci}\left(\frac{cf}{d}+fx\right)}{d^2}-\frac{b\sin(e+fx)}{d(c+dx)}-\frac{bf\sin\left(e-\frac{cf}{d}\right)\text{Si}\left(\frac{cf}{d}+f\cdots\right)}{d^2}
\end{aligned}$$

Mathematica [A] time = 0.38, size = 72, normalized size = 0.82

$$\frac{-\frac{d(a+b\sin(e+fx))}{c+dx}+bf\,\text{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\cos\left(e-\frac{cf}{d}\right)-bf\sin\left(e-\frac{cf}{d}\right)\text{Si}\left(f\left(\frac{c}{d}+x\right)\right)}{d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sin[e + f*x])/(c + d*x)^2,x]
```

```
[Out] (b*f*Cos[e - (c*f)/d]*CosIntegral[f*(c/d + x)] - (d*(a + b*Sin[e + f*x]))/(
c + d*x) - b*f*Sin[e - (c*f)/d]*SinIntegral[f*(c/d + x)])/d^2
```

fricas [A] time = 0.75, size = 135, normalized size = 1.53

$$-\frac{2\,bd\sin\left(fx+e\right)-2\left(bdfx+bcf\right)\sin\left(-\frac{de-cf}{d}\right)\mathrm{Si}\left(\frac{dfx+cf}{d}\right)+2\,ad-\left(\left(bdfx+bcf\right)\mathrm{Ci}\left(\frac{dfx+cf}{d}\right)+\left(bdfx+bcf\right)\right.}{2\left(d^3x+cd^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*d*sin(f*x + e) - 2*(b*d*f*x + b*c*f)*sin(-(d*e - c*f)/d)*sin_inte
gral((d*f*x + c*f)/d) + 2*a*d - ((b*d*f*x + b*c*f)*cos_integral((d*f*x + c*
f)/d) + (b*d*f*x + b*c*f)*cos_integral(-(d*f*x + c*f)/d))*cos(-(d*e - c*f)/
d))/(d^3*x + c*d^2)
```

giac [B] time = 2.53, size = 578, normalized size = 6.57

$$\left((dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)f^2\cos\left(\frac{cf-de}{d}\right)\mathrm{Ci}\left(-\frac{(dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)-cf+de}{d}\right)-cf^3\cos\left(\frac{cf-de}{d}\right)\mathrm{Ci}\left(-\frac{(dx+c)\left(\frac{cf}{dx+c}-f-\frac{de}{dx+c}\right)}{d}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c)^2,x, algorithm="giac")
```

```
[Out] ((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*cos((c*f - d*e)/d)*cos_i
ntegral(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d) - c
*f^3*cos((c*f - d*e)/d)*cos_integral(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(
d*x + c)) - c*f + d*e)/d) + d*f^2*cos((c*f - d*e)/d)*cos_integral(-((d*x +
c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e + (d*x + c)*(c*f/(
d*x + c) - f - d*e/(d*x + c))*f^2*sin((c*f - d*e)/d)*sin_integral(-((d*x +
c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d) - c*f^3*sin((c*f - d
*e)/d)*sin_integral(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f +
 d*e)/d) + d*f^2*e*sin((c*f - d*e)/d)*sin_integral(-((d*x + c)*(c*f/(d*x +
c) - f - d*e/(d*x + c)) - c*f + d*e)/d) - d*f^2*sin((d*x + c)*(c*f/(d*x + c
) - f - d*e/(d*x + c))/d))*b*d^2/((((d*x + c)*d^4*(c*f/(d*x + c) - f - d*e/(
d*x + c)) - c*d^4*f + d^5*e)*f) - a/((d*x + c)*d)
```

maple [A] time = 0.02, size = 141, normalized size = 1.60

$$\frac{-\frac{af^2}{\left(\left(fx+e\right)d+cf-de\right)d}+f^2b\left(-\frac{\sin\left(fx+e\right)}{\left(\left(fx+e\right)d+cf-de\right)d}+\frac{\frac{\mathrm{Si}\left(fx+e+\frac{cf-de}{d}\right)\sin\left(\frac{cf-de}{d}\right)}{d}+\frac{\mathrm{Ci}\left(fx+e+\frac{cf-de}{d}\right)\cos\left(\frac{cf-de}{d}\right)}{d}}{d}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sin(f*x+e))/(d*x+c)^2,x)
```

```
[Out] 1/f*(-a*f^2/((f*x+e)*d+c*f-d*e)/d+f^2*b*(-sin(f*x+e)/((f*x+e)*d+c*f-d*e)/d+
(Si(f*x+e+(c*f-d*e)/d)*sin((c*f-d*e)/d)/d+Ci(f*x+e+(c*f-d*e)/d)*cos((c*f-d*
e)/d)/d)/d))
```

maxima [C] time = 0.50, size = 196, normalized size = 2.23

$$-\frac{\frac{2af^2}{(fx+e)d^2-d^2e+cdf} - \frac{\left(f^2\left(-iE_2\left(\frac{i(fx+e)d-ide+icf}{d}\right)+iE_2\left(-\frac{i(fx+e)d-ide+icf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f^2\left(E_2\left(\frac{i(fx+e)d-ide+icf}{d}\right)+E_2\left(-\frac{i(fx+e)d-ide+icf}{d}\right)\right)\sin\left(-\right.}{(fx+e)d^2-d^2e+cdf}}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(2*a*f^2/((f*x + e)*d^2 - d^2*e + c*d*f) - (f^2*(-I*exp_integral_e(2,
(I*(f*x + e)*d - I*d*e + I*c*f)/d) + I*exp_integral_e(2, -(I*(f*x + e)*d -
I*d*e + I*c*f)/d))*cos(-(d*e - c*f)/d) + f^2*(exp_integral_e(2, (I*(f*x + e
)*d - I*d*e + I*c*f)/d) + exp_integral_e(2, -(I*(f*x + e)*d - I*d*e + I*c*f
)/d))*sin(-(d*e - c*f)/d))*b/((f*x + e)*d^2 - d^2*e + c*d*f))/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\sin\left(e+f\,x\right)}{{\left(c+d\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))/(c + d*x)^2,x)
```

```
[Out] int((a + b*sin(e + f*x))/(c + d*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + b \sin{\left(e + f x \right)}}{\left(c + d x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c)**2,x)
```

```
[Out] Integral((a + b*sin(e + f*x))/(c + d*x)**2, x)
```

3.156 $\int \frac{a+b\sin(e+fx)}{(c+dx)^3}\,dx$

Optimal. Leaf size=123

$$-\frac{a}{2d(c+dx)^2}-\frac{bf^2\text{Ci}\left(xf+\frac{cf}{d}\right)\sin\left(e-\frac{cf}{d}\right)}{2d^3}-\frac{bf^2\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{2d^3}-\frac{bf\cos(e+fx)}{2d^2(c+dx)}-\frac{b\sin(e+fx)}{2d(c+dx)^2}$$

```
[Out] -1/2*a/d/(d*x+c)^2-1/2*b*f*cos(f*x+e)/d^2/(d*x+c)-1/2*b*f^2*cos(-e+c*f/d)*S
i(c*f/d+f*x)/d^3+1/2*b*f^2*Ci(c*f/d+f*x)*sin(-e+c*f/d)/d^3-1/2*b*sin(f*x+e)
/d/(d*x+c)^2
```

Rubi [A] time = 0.19, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3317, 3297, 3303, 3299, 3302}

$$-\frac{a}{2d(c+dx)^2}-\frac{bf^2\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{2d^3}-\frac{bf^2\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{2d^3}-\frac{bf\cos(e+fx)}{2d^2(c+dx)}-\frac{b\sin(e+}{2d(c+}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sin[e + f*x])/(c + d*x)^3,x]
```

```
[Out] -a/(2*d*(c + d*x)^2) - (b*f*Cos[e + f*x])/(2*d^2*(c + d*x)) - (b*f^2*CosInt
egral[(c*f)/d + f*x]*Sin[e - (c*f)/d])/(2*d^3) - (b*Sin[e + f*x])/(2*d*(c +
 d*x)^2) - (b*f^2*Cos[e - (c*f)/d]*SinIntegral[(c*f)/d + f*x])/(2*d^3)
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int \frac{a+b\sin(e+fx)}{(c+dx)^3}\,dx = \int \left(\frac{a}{(c+dx)^3}+\frac{b\sin(e+fx)}{(c+dx)^3}\right)dx$$
$$= -\frac{a}{2d(c+dx)^2}+b\int \frac{\sin(e+fx)}{(c+dx)^3}\,dx$$
$$= -\frac{a}{2d(c+dx)^2}-\frac{b\sin(e+fx)}{2d(c+dx)^2}+\frac{(bf)\int \frac{\cos(e+fx)}{(c+dx)^2}\,dx}{2d}$$
$$= -\frac{a}{2d(c+dx)^2}-\frac{bf\cos(e+fx)}{2d^2(c+dx)}-\frac{b\sin(e+fx)}{2d(c+dx)^2}-\frac{\left(bf^2\right)\int \frac{\sin(e+fx)}{c+dx}\,dx}{2d^2}$$
$$= -\frac{a}{2d(c+dx)^2}-\frac{bf\cos(e+fx)}{2d^2(c+dx)}-\frac{b\sin(e+fx)}{2d(c+dx)^2}-\frac{\left(bf^2\cos\left(e-\frac{cf}{d}\right)\right)\int \frac{\sin\left(\frac{cf}{d}+fx\right)}{c+dx}\,dx}{2d^2}-$$
$$= -\frac{a}{2d(c+dx)^2}-\frac{bf\cos(e+fx)}{2d^2(c+dx)}-\frac{bf^2\text{Ci}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{2d^3}-\frac{b\sin(e+fx)}{2d(c+dx)^2}-\frac{bf^2\,\text{c}}{}$$

Mathematica [A] time = 0.88, size = 94, normalized size = 0.76

$$-\frac{\frac{d(d(a+b\sin(e+fx))+bf(c+dx)\cos(e+fx))}{(c+dx)^2}+bf^2\text{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\sin\left(e-\frac{cf}{d}\right)+bf^2\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(f\left(\frac{c}{d}+x\right)\right)}{2d^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sin[e + f*x])/(c + d*x)^3,x]
```

```
[Out] -1/2*(b*f^2*CosIntegral[f*(c/d + x)]*Sin[e - (c*f)/d] + (d*(b*f*(c + d*x)*C
os[e + f*x] + d*(a + b*Sin[e + f*x])))/(c + d*x)^2 + b*f^2*Cos[e - (c*f)/d]
*SinIntegral[f*(c/d + x)])/d^3
```

fricas [A] time = 0.75, size = 228, normalized size = 1.85

$$-\frac{2\,bd^2\sin\left(fx+e\right)+2\,ad^2+2\left(bd^2f^2x^2+2\,bcdf^2x+bc^2f^2\right)\cos\left(-\frac{de-cf}{d}\right)\mathrm{Si}\left(\frac{dfx+cf}{d}\right)+2\left(bd^2fx+bcdf\right)\cos\left(\right.}{4\left(d^5x^2+2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(2*b*d^2*sin(f*x + e) + 2*a*d^2 + 2*(b*d^2*f^2*x^2 + 2*b*c*d*f^2*x + b
*c^2*f^2)*cos(-(d*e - c*f)/d)*sin_integral((d*f*x + c*f)/d) + 2*(b*d^2*f*x
+ b*c*d*f)*cos(f*x + e) - ((b*d^2*f^2*x^2 + 2*b*c*d*f^2*x + b*c^2*f^2)*cos_
integral((d*f*x + c*f)/d) + (b*d^2*f^2*x^2 + 2*b*c*d*f^2*x + b*c^2*f^2)*cos
_integral(-(d*f*x + c*f)/d))*sin(-(d*e - c*f)/d))/(d^5*x^2 + 2*c*d^4*x + c^
2*d^3)
```

giac [C] time = 1.42, size = 6157, normalized size = 50.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c)^3,x, algorithm="giac")
```

```
[Out] -1/4*(b*d^2*f^2*x^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan
(1/2*c*f/d)^2*tan(1/2*e)^2 - b*d^2*f^2*x^2*imag_part(cos_integral(-f*x - c*
f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*b*d^2*f^2*x^2*sin_in
tegral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*b*
d^2*f^2*x^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f
/d)^2*tan(1/2*e) - 2*b*d^2*f^2*x^2*real_part(cos_integral(-f*x - c*f/d))*ta
n(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e) + 2*b*d^2*f^2*x^2*real_part(cos_in
tegral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e)^2 + 2*b*d^2*f
^2*x^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*
tan(1/2*e)^2 + 2*b*c*d*f^2*x*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f
*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*b*c*d*f^2*x*imag_part(cos_integral(
-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 4*b*c*d*f^2*x
*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2
 - b*d^2*f^2*x^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/
2*c*f/d)^2 + b*d^2*f^2*x^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*
x)^2*tan(1/2*c*f/d)^2 - 2*b*d^2*f^2*x^2*sin_integral((d*f*x + c*f)/d)*tan(1
/2*f*x)^2*tan(1/2*c*f/d)^2 + 4*b*d^2*f^2*x^2*imag_part(cos_integral(f*x + c
```

```
*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) - 4*b*d^2*f^2*x^2*imag_part
(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) + 8*b
*d^2*f^2*x^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*c*f/d)*ta
n(1/2*e) - 4*b*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^
2*tan(1/2*c*f/d)^2*tan(1/2*e) - 4*b*c*d*f^2*x*real_part(cos_integral(-f*x -
 c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e) - b*d^2*f^2*x^2*imag_pa
rt(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*e)^2 + b*d^2*f^2*x^2*i
mag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*e)^2 - 2*b*d^2*
f^2*x^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*e)^2 + 4*b*c*d
*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*t
an(1/2*e)^2 + 4*b*c*d*f^2*x*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*f
*x)^2*tan(1/2*c*f/d)*tan(1/2*e)^2 + b*d^2*f^2*x^2*imag_part(cos_integral(f*
x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - b*d^2*f^2*x^2*imag_part(cos_int
egral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*b*d^2*f^2*x^2*sin_in
tegral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + b*c^2*f^2*imag_part
(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 -
b*c^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/
d)^2*tan(1/2*e)^2 + 2*b*c^2*f^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^
2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*b*d^2*f^2*x^2*real_part(cos_integral(f*
x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d) - 2*b*d^2*f^2*x^2*real_part(cos_i
ntegral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d) - 2*b*c*d*f^2*x*imag_p
art(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2 + 2*b*c*d*f^
2*x*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2 -
 4*b*c*d*f^2*x*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*c*f/d)^
2 + 2*b*d^2*f^2*x^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan
(1/2*e) + 2*b*d^2*f^2*x^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x
)^2*tan(1/2*e) + 8*b*c*d*f^2*x*imag_part(cos_integral(f*x + c*f/d))*tan(1/2
*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) - 8*b*c*d*f^2*x*imag_part(cos_integral(-f
*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) + 16*b*c*d*f^2*x*sin_
integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) - 2*b*d^
2*f^2*x^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)
- 2*b*d^2*f^2*x^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*ta
n(1/2*e) - 2*b*c^2*f^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*
tan(1/2*c*f/d)^2*tan(1/2*e) - 2*b*c^2*f^2*real_part(cos_integral(-f*x - c*f
/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e) - 2*b*c*d*f^2*x*imag_part(c
os_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*b*c*d*f^2*x*imag_
part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*e)^2 - 4*b*c*d*f^2*
x*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*b*d^2*f^2*x
^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e)^2 + 2*b*d
^2*f^2*x^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e)^
2 + 2*b*c^2*f^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2
*c*f/d)*tan(1/2*e)^2 + 2*b*c^2*f^2*real_part(cos_integral(-f*x - c*f/d))*ta
n(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e)^2 + 2*b*c*d*f^2*x*imag_part(cos_inte
gral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 2*b*c*d*f^2*x*imag_part(
cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 4*b*c*d*f^2*x*s
```

```
in_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*b*d^2*f*x*ta
n(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + b*d^2*f^2*x^2*imag_part(cos_in
tegral(f*x + c*f/d))*tan(1/2*f*x)^2 - b*d^2*f^2*x^2*imag_part(cos_integral(
-f*x - c*f/d))*tan(1/2*f*x)^2 + 2*b*d^2*f^2*x^2*sin_integral((d*f*x + c*f)/
d)*tan(1/2*f*x)^2 - 4*b*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(
1/2*f*x)^2*tan(1/2*c*f/d) - 4*b*c*d*f^2*x*real_part(cos_integral(-f*x - c*f
/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d) - b*d^2*f^2*x^2*imag_part(cos_integral(f
*x + c*f/d))*tan(1/2*c*f/d)^2 + b*d^2*f^2*x^2*imag_part(cos_integral(-f*x -
 c*f/d))*tan(1/2*c*f/d)^2 - 2*b*d^2*f^2*x^2*sin_integral((d*f*x + c*f)/d)*t
an(1/2*c*f/d)^2 - b*c^2*f^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f*
x)^2*tan(1/2*c*f/d)^2 + b*c^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan
(1/2*f*x)^2*tan(1/2*c*f/d)^2 - 2*b*c^2*f^2*sin_integral((d*f*x + c*f)/d)*ta
n(1/2*f*x)^2*tan(1/2*c*f/d)^2 + 4*b*c*d*f^2*x*real_part(cos_integral(f*x +
c*f/d))*tan(1/2*f*x)^2*tan(1/2*e) + 4*b*c*d*f^2*x*real_part(cos_integral(-f
*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*e) + 4*b*d^2*f^2*x^2*imag_part(cos_inte
gral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) - 4*b*d^2*f^2*x^2*imag_part(co
s_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) + 8*b*d^2*f^2*x^2*sin_i
ntegral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/2*e) + 4*b*c^2*f^2*imag_part(
cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*tan(1/2*e) - 4*b*c
^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d)*
tan(1/2*e) + 8*b*c^2*f^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1
/2*c*f/d)*tan(1/2*e) - 4*b*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*t
an(1/2*c*f/d)^2*tan(1/2*e) - 4*b*c*d*f^2*x*real_part(cos_integral(-f*x - c*
f/d))*tan(1/2*c*f/d)^2*tan(1/2*e) - b*d^2*f^2*x^2*imag_part(cos_integral(f*
x + c*f/d))*tan(1/2*e)^2 + b*d^2*f^2*x^2*imag_part(cos_integral(-f*x - c*f/
d))*tan(1/2*e)^2 - 2*b*d^2*f^2*x^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*e)
^2 - b*c^2*f^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*
e)^2 + b*c^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1
/2*e)^2 - 2*b*c^2*f^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2*tan(1/2*
e)^2 + 4*b*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*ta
n(1/2*e)^2 + 4*b*c*d*f^2*x*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*
f/d)*tan(1/2*e)^2 + b*c^2*f^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*
c*f/d)^2*tan(1/2*e)^2 - b*c^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan
(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*b*c^2*f^2*sin_integral((d*f*x + c*f)/d)*tan(
1/2*c*f/d)^2*tan(1/2*e)^2 + 2*b*c*d*f*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2*tan(1
/2*e)^2 + 2*b*c*d*f^2*x*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2
 - 2*b*c*d*f^2*x*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2 + 4*b
*c*d*f^2*x*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x)^2 - 2*b*d^2*f^2*x^2*r
eal_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d) - 2*b*d^2*f^2*x^2*real_p
art(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d) - 2*b*c^2*f^2*real_part(cos_
integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d) - 2*b*c^2*f^2*real_par
t(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*c*f/d) - 2*b*c*d*f^2*x
*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2 + 2*b*c*d*f^2*x*imag
_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2 - 4*b*c*d*f^2*x*sin_inte
gral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2 - 2*b*d^2*f*x*tan(1/2*f*x)^2*tan(1/2
```

```
*c*f/d)^2 + 2*b*d^2*f^2*x^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*e)
 + 2*b*d^2*f^2*x^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*e) + 2*b*c
^2*f^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*f*x)^2*tan(1/2*e) + 2*b
*c^2*f^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*f*x)^2*tan(1/2*e) +
8*b*c*d*f^2*x*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e
) - 8*b*c*d*f^2*x*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(
1/2*e) + 16*b*c*d*f^2*x*sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/
2*e) - 2*b*c^2*f^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*ta
n(1/2*e) - 2*b*c^2*f^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)
^2*tan(1/2*e) - 8*b*d^2*f*x*tan(1/2*f*x)*tan(1/2*c*f/d)^2*tan(1/2*e) - 2*b*
c*d*f^2*x*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*e)^2 + 2*b*c*d*f^2*x
*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*e)^2 - 4*b*c*d*f^2*x*sin_int
egral((d*f*x + c*f)/d)*tan(1/2*e)^2 + 2*b*d^2*f*x*tan(1/2*f*x)^2*tan(1/2*e)
^2 + 2*b*c^2*f^2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/
2*e)^2 + 2*b*c^2*f^2*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*t
an(1/2*e)^2 - 2*b*d^2*f*x*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*a*d^2*tan(1/2*f
*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + b*d^2*f^2*x^2*imag_part(cos_integral(
f*x + c*f/d)) - b*d^2*f^2*x^2*imag_part(cos_integral(-f*x - c*f/d)) + 2*b*d
^2*f^2*x^2*sin_integral((d*f*x + c*f)/d) + b*c^2*f^2*imag_part(cos_integral
(f*x + c*f/d))*tan(1/2*f*x)^2 - b*c^2*f^2*imag_part(cos_integral(-f*x - c*f
/d))*tan(1/2*f*x)^2 + 2*b*c^2*f^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*f*x
)^2 - 4*b*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d) - 4
*b*c*d*f^2*x*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d) - b*c^2*f
^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2 + b*c^2*f^2*imag_p
art(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2 - 2*b*c^2*f^2*sin_integral
((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2 - 2*b*c*d*f*tan(1/2*f*x)^2*tan(1/2*c*f/d
)^2 + 4*b*c*d*f^2*x*real_part(cos_integral(f*x + c*f/d))*tan(1/2*e) + 4*b*c
*d*f^2*x*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*e) + 4*b*c^2*f^2*ima
g_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) - 4*b*c^2*f^2*i
mag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) + 8*b*c^2*f^
2*sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/2*e) - 8*b*c*d*f*tan(1
/2*f*x)*tan(1/2*c*f/d)^2*tan(1/2*e) - 4*b*d^2*tan(1/2*f*x)^2*tan(1/2*c*f/d)
^2*tan(1/2*e) - b*c^2*f^2*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*e)^2
 + b*c^2*f^2*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*e)^2 - 2*b*c^2*f
^2*sin_integral((d*f*x + c*f)/d)*tan(1/2*e)^2 + 2*b*c*d*f*tan(1/2*f*x)^2*ta
n(1/2*e)^2 - 2*b*c*d*f*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 4*b*d^2*tan(1/2*f*x)
*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*b*c*d*f^2*x*imag_part(cos_integral(f*x +
 c*f/d)) - 2*b*c*d*f^2*x*imag_part(cos_integral(-f*x - c*f/d)) + 4*b*c*d*f^
2*x*sin_integral((d*f*x + c*f)/d) - 2*b*d^2*f*x*tan(1/2*f*x)^2 - 2*b*c^2*f^
2*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d) - 2*b*c^2*f^2*real_pa
rt(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d) + 2*b*d^2*f*x*tan(1/2*c*f/d)^
2 + 2*a*d^2*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2 + 2*b*c^2*f^2*real_part(cos_int
egral(f*x + c*f/d))*tan(1/2*e) + 2*b*c^2*f^2*real_part(cos_integral(-f*x -
c*f/d))*tan(1/2*e) - 8*b*d^2*f*x*tan(1/2*f*x)*tan(1/2*e) - 2*b*d^2*f*x*tan(
1/2*e)^2 + 2*a*d^2*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*a*d^2*tan(1/2*c*f/d)^2*t
```

```
an(1/2*e)^2 + b*c^2*f^2*imag_part(cos_integral(f*x + c*f/d)) - b*c^2*f^2*im
ag_part(cos_integral(-f*x - c*f/d)) + 2*b*c^2*f^2*sin_integral((d*f*x + c*f
)/d) - 2*b*c*d*f*tan(1/2*f*x)^2 + 2*b*c*d*f*tan(1/2*c*f/d)^2 + 4*b*d^2*tan(
1/2*f*x)*tan(1/2*c*f/d)^2 - 8*b*c*d*f*tan(1/2*f*x)*tan(1/2*e) - 4*b*d^2*tan
(1/2*f*x)^2*tan(1/2*e) + 4*b*d^2*tan(1/2*c*f/d)^2*tan(1/2*e) - 2*b*c*d*f*ta
n(1/2*e)^2 - 4*b*d^2*tan(1/2*f*x)*tan(1/2*e)^2 + 2*b*d^2*f*x + 2*a*d^2*tan(
1/2*f*x)^2 + 2*a*d^2*tan(1/2*c*f/d)^2 + 2*a*d^2*tan(1/2*e)^2 + 2*b*c*d*f +
4*b*d^2*tan(1/2*f*x) + 4*b*d^2*tan(1/2*e) + 2*a*d^2)/(d^5*x^2*tan(1/2*f*x)^
2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*c*d^4*x*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2
*tan(1/2*e)^2 + d^5*x^2*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2 + d^5*x^2*tan(1/2*f
*x)^2*tan(1/2*e)^2 + d^5*x^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + c^2*d^3*tan(1/
2*f*x)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*c*d^4*x*tan(1/2*f*x)^2*tan(1/2*c
*f/d)^2 + 2*c*d^4*x*tan(1/2*f*x)^2*tan(1/2*e)^2 + 2*c*d^4*x*tan(1/2*c*f/d)^
2*tan(1/2*e)^2 + d^5*x^2*tan(1/2*f*x)^2 + d^5*x^2*tan(1/2*c*f/d)^2 + c^2*d^
3*tan(1/2*f*x)^2*tan(1/2*c*f/d)^2 + d^5*x^2*tan(1/2*e)^2 + c^2*d^3*tan(1/2*
f*x)^2*tan(1/2*e)^2 + c^2*d^3*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*c*d^4*x*tan
(1/2*f*x)^2 + 2*c*d^4*x*tan(1/2*c*f/d)^2 + 2*c*d^4*x*tan(1/2*e)^2 + d^5*x^2
 + c^2*d^3*tan(1/2*f*x)^2 + c^2*d^3*tan(1/2*c*f/d)^2 + c^2*d^3*tan(1/2*e)^2
 + 2*c*d^4*x + c^2*d^3)
```

maple [A] time = 0.02, size = 177, normalized size = 1.44

$$\frac{-\frac{a f^3}{2\left(\left(fx+e\right)d+cf-de\right)^2 d} + f^3 b\left(-\frac{\sin\left(fx+e\right)}{2\left(\left(fx+e\right)d+cf-de\right)^2 d} + \frac{-\frac{\cos\left(fx+e\right)}{\left(\left(fx+e\right)d+cf-de\right)d} - \frac{\frac{\mathrm{Si}\left(fx+e+\frac{cf-de}{d}\right)\cos\left(\frac{cf-de}{d}\right)}{d} - \frac{\mathrm{Ci}\left(fx+e+\frac{cf-de}{d}\right)\sin\left(\frac{cf-de}{d}\right)}{d}}{d}}{2d}\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sin(f*x+e))/(d*x+c)^3,x)
```

```
[Out] 1/f*(-1/2*a*f^3/((f*x+e)*d+c*f-d*e)^2/d+f^3*b*(-1/2*sin(f*x+e)/((f*x+e)*d+c
*f-d*e)^2/d+1/2*(-cos(f*x+e)/((f*x+e)*d+c*f-d*e)/d-(Si(f*x+e+(c*f-d*e)/d)*c
os((c*f-d*e)/d)/d-Ci(f*x+e+(c*f-d*e)/d)*sin((c*f-d*e)/d)/d)/d)/d))
```

maxima [C] time = 0.95, size = 265, normalized size = 2.15

$$-\frac{\frac{af^3}{\left(fx+e\right)^2 d^3+d^3e^2-2\,cd^2ef+c^2df^2-2\left(d^3e-cd^2f\right)\left(fx+e\right)} - \frac{\left(f^3\left(-i\,E_3\left(\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)+i\,E_3\left(-\frac{i\left(fx+e\right)d-i\,de+i\,cf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f^3\left(E_3\left(\frac{i\left(fx+e\right)d-i\,d}{d}\right.\right.}{\left(fx+e\right)^2 d^3+d^3e^2-2\,cd^2ef+c^2df^2-2\left(d^3e-cd^2f\right)\left(\right.}}{2\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(a*f^3/((f*x + e)^2*d^3 + d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*(d^3*e
 - c*d^2*f)*(f*x + e)) - (f^3*(-I*exp_integral_e(3, (I*(f*x + e)*d - I*d*e
+ I*c*f)/d) + I*exp_integral_e(3, -(I*(f*x + e)*d - I*d*e + I*c*f)/d))*cos(
-(d*e - c*f)/d) + f^3*(exp_integral_e(3, (I*(f*x + e)*d - I*d*e + I*c*f)/d)
 + exp_integral_e(3, -(I*(f*x + e)*d - I*d*e + I*c*f)/d))*sin(-(d*e - c*f)/
d))*b/((f*x + e)^2*d^3 + d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*(d^3*e - c*d
^2*f)*(f*x + e)))/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,\sin\left(e+f\,x\right)}{{\left(c+d\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))/(c + d*x)^3,x)
```

```
[Out] int((a + b*sin(e + f*x))/(c + d*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+b\sin\left(e+fx\right)}{\left(c+dx\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))/(d*x+c)**3,x)
```

```
[Out] Integral((a + b*sin(e + f*x))/(c + d*x)**3, x)
```

3.157 $\int (c+dx)^3(a+b\sin(e+fx))^2\,dx$

Optimal. Leaf size=250

$$\frac{a^2(c+dx)^4}{4d}+\frac{12abd^2(c+dx)\cos(e+fx)}{f^3}+\frac{6abd(c+dx)^2\sin(e+fx)}{f^2}-\frac{2ab(c+dx)^3\cos(e+fx)}{f}-\frac{12abd^3\sin(e+}{f^4}$$

```
[Out] -3/4*b^2*c*d^2*x/f^2-3/8*b^2*d^3*x^2/f^2+1/4*a^2*(d*x+c)^4/d+1/8*b^2*(d*x+c
)^4/d+12*a*b*d^2*(d*x+c)*cos(f*x+e)/f^3-2*a*b*(d*x+c)^3*cos(f*x+e)/f-12*a*b
*d^3*sin(f*x+e)/f^4+6*a*b*d*(d*x+c)^2*sin(f*x+e)/f^2+3/4*b^2*d^2*(d*x+c)*co
s(f*x+e)*sin(f*x+e)/f^3-1/2*b^2*(d*x+c)^3*cos(f*x+e)*sin(f*x+e)/f-3/8*b^2*d
^3*sin(f*x+e)^2/f^4+3/4*b^2*d*(d*x+c)^2*sin(f*x+e)^2/f^2
```

Rubi [A] time = 0.27, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {3317, 3296, 2637, 3311, 32, 3310}

$$\frac{a^2(c+dx)^4}{4d}+\frac{12abd^2(c+dx)\cos(e+fx)}{f^3}+\frac{6abd(c+dx)^2\sin(e+fx)}{f^2}-\frac{2ab(c+dx)^3\cos(e+fx)}{f}-\frac{12abd^3\sin(e+}{f^4}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3*(a + b*Sin[e + f*x])^2,x]
```

```
[Out] (-3*b^2*c*d^2*x)/(4*f^2) - (3*b^2*d^3*x^2)/(8*f^2) + (a^2*(c + d*x)^4)/(4*d
) + (b^2*(c + d*x)^4)/(8*d) + (12*a*b*d^2*(c + d*x)*Cos[e + f*x])/f^3 - (2*
a*b*(c + d*x)^3*Cos[e + f*x])/f - (12*a*b*d^3*Sin[e + f*x])/f^4 + (6*a*b*d*
(c + d*x)^2*Sin[e + f*x])/f^2 + (3*b^2*d^2*(c + d*x)*Cos[e + f*x]*Sin[e + f
*x])/(4*f^3) - (b^2*(c + d*x)^3*Cos[e + f*x]*Sin[e + f*x])/(2*f) - (3*b^2*d
^3*Sin[e + f*x]^2)/(8*f^4) + (3*b^2*d*(c + d*x)^2*Sin[e + f*x]^2)/(4*f^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}\int (c+dx)^3(a+b\sin(e+fx))^2\,dx &= \int \left(a^2(c+dx)^3+2ab(c+dx)^3\sin(e+fx)+b^2(c+dx)^3\sin^2(e+fx)\right)dx\\
&= \frac{a^2(c+dx)^4}{4d}+(2ab)\int (c+dx)^3\sin(e+fx)\,dx+b^2\int (c+dx)^3\sin^2(e+fx)\\
&= \frac{a^2(c+dx)^4}{4d}-\frac{2ab(c+dx)^3\cos(e+fx)}{f}-\frac{b^2(c+dx)^3\cos(e+fx)\sin(e+fx}{2f}\\
&= \frac{a^2(c+dx)^4}{4d}+\frac{b^2(c+dx)^4}{8d}-\frac{2ab(c+dx)^3\cos(e+fx)}{f}+\frac{6abd(c+dx)^2\sin(e}{f^2}\\
&= -\frac{3b^2cd^2x}{4f^2}-\frac{3b^2d^3x^2}{8f^2}+\frac{a^2(c+dx)^4}{4d}+\frac{b^2(c+dx)^4}{8d}+\frac{12abd^2(c+dx)\cos(e+}{f^3}\\
&= -\frac{3b^2cd^2x}{4f^2}-\frac{3b^2d^3x^2}{8f^2}+\frac{a^2(c+dx)^4}{4d}+\frac{b^2(c+dx)^4}{8d}+\frac{12abd^2(c+dx)\cos(e+}{f^3}\end{aligned}$$

Mathematica [A] time = 1.41, size = 232, normalized size = 0.93

$$\frac{2f^4x\left(2a^2+b^2\right)\left(4c^3+6c^2dx+4cd^2x^2+d^3x^3\right)+96abd\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2-2\right)\right)\sin(e+fx)-32abf(c}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3*(a + b*Sin[e + f*x])^2,x]
```

```
[Out] (2*(2*a^2 + b^2)*f^4*x*(4*c^3 + 6*c^2*d*x + 4*c*d^2*x^2 + d^3*x^3) - 32*a*b
*f*(c + d*x)*(c^2*f^2 + 2*c*d*f^2*x + d^2*(-6 + f^2*x^2))*Cos[e + f*x] - 3*
b^2*d*(2*c^2*f^2 + 4*c*d*f^2*x + d^2*(-1 + 2*f^2*x^2))*Cos[2*(e + f*x)] + 9
6*a*b*d*(c^2*f^2 + 2*c*d*f^2*x + d^2*(-2 + f^2*x^2))*Sin[e + f*x] - 2*b^2*f
*(c + d*x)*(2*c^2*f^2 + 4*c*d*f^2*x + d^2*(-3 + 2*f^2*x^2))*Sin[2*(e + f*x)
])/(16*f^4)
```

fricas [A] time = 0.58, size = 382, normalized size = 1.53

$$\frac{\left(2a^2+b^2\right)d^3f^4x^4+4\left(2a^2+b^2\right)cd^2f^4x^3+3\left(2\left(2a^2+b^2\right)c^2df^4+b^2d^3f^2\right)x^2-3\left(2b^2d^3f^2x^2+4b^2cd^2f^2x+2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/8*((2*a^2 + b^2)*d^3*f^4*x^4 + 4*(2*a^2 + b^2)*c*d^2*f^4*x^3 + 3*(2*(2*a^
2 + b^2)*c^2*d*f^4 + b^2*d^3*f^2)*x^2 - 3*(2*b^2*d^3*f^2*x^2 + 4*b^2*c*d^2*
f^2*x + 2*b^2*c^2*d*f^2 - b^2*d^3)*cos(f*x + e)^2 + 2*(2*(2*a^2 + b^2)*c^3*
f^4 + 3*b^2*c*d^2*f^2)*x - 16*(a*b*d^3*f^3*x^3 + 3*a*b*c*d^2*f^3*x^2 + a*b*
c^3*f^3 - 6*a*b*c*d^2*f + 3*(a*b*c^2*d*f^3 - 2*a*b*d^3*f)*x)*cos(f*x + e) +
 2*(24*a*b*d^3*f^2*x^2 + 48*a*b*c*d^2*f^2*x + 24*a*b*c^2*d*f^2 - 48*a*b*d^3
 - (2*b^2*d^3*f^3*x^3 + 6*b^2*c*d^2*f^3*x^2 + 2*b^2*c^3*f^3 - 3*b^2*c*d^2*f
 + 3*(2*b^2*c^2*d*f^3 - b^2*d^3*f)*x)*cos(f*x + e))*sin(f*x + e))/f^4
```

giac [A] time = 0.34, size = 371, normalized size = 1.48

$$\frac{1}{4}a^2d^3x^4+\frac{1}{8}b^2d^3x^4+a^2cd^2x^3+\frac{1}{2}b^2cd^2x^3+\frac{3}{2}a^2c^2dx^2+\frac{3}{4}b^2c^2dx^2+a^2c^3x+\frac{1}{2}b^2c^3x-\frac{3\left(2b^2d^3f^2x^2+4b^2cd^2f^2x+\right.}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/4*a^2*d^3*x^4 + 1/8*b^2*d^3*x^4 + a^2*c*d^2*x^3 + 1/2*b^2*c*d^2*x^3 + 3/2
*a^2*c^2*d*x^2 + 3/4*b^2*c^2*d*x^2 + a^2*c^3*x + 1/2*b^2*c^3*x - 3/16*(2*b^
```

```
2*d^3*f^2*x^2 + 4*b^2*c*d^2*f^2*x + 2*b^2*c^2*d*f^2 - b^2*d^3)*cos(2*f*x +
2*e)/f^4 - 2*(a*b*d^3*f^3*x^3 + 3*a*b*c*d^2*f^3*x^2 + 3*a*b*c^2*d*f^3*x + a
*b*c^3*f^3 - 6*a*b*d^3*f*x - 6*a*b*c*d^2*f)*cos(f*x + e)/f^4 - 1/8*(2*b^2*d
^3*f^3*x^3 + 6*b^2*c*d^2*f^3*x^2 + 6*b^2*c^2*d*f^3*x + 2*b^2*c^3*f^3 - 3*b^
2*d^3*f*x - 3*b^2*c*d^2*f)*sin(2*f*x + 2*e)/f^4 + 6*(a*b*d^3*f^2*x^2 + 2*a*
b*c*d^2*f^2*x + a*b*c^2*d*f^2 - 2*a*b*d^3)*sin(f*x + e)/f^4
```

maple [B] time = 0.04, size = 1125, normalized size = 4.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3*(a+b*sin(f*x+e))^2,x)
```

```
[Out] 1/f*(-2*a*b*c^3*cos(f*x+e)+1/f^3*b^2*d^3*((f*x+e)^3*(-1/2*sin(f*x+e)*cos(f*
x+e)+1/2*f*x+1/2*e)-3/4*(f*x+e)^2*cos(f*x+e)^2+3/2*(f*x+e)*(1/2*sin(f*x+e)*
cos(f*x+e)+1/2*f*x+1/2*e)-3/8*(f*x+e)^2-3/8*sin(f*x+e)^2-3/8*(f*x+e)^4)+1/4
*a^2/f^3*d^3*(f*x+e)^4-6/f^2*a*b*c*d^2*e^2*cos(f*x+e)+6/f*a*b*c^2*d*e*cos(f
*x+e)-12/f^2*a*b*c*d^2*e*(sin(f*x+e)-(f*x+e)*cos(f*x+e))+a^2*c^3*(f*x+e)+b^
2*c^3*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)+3/2*a^2/f*c^2*d*(f*x+e)^2-
a^2/f^3*d^3*e^3*(f*x+e)-1/f^3*b^2*d^3*e^3*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f
*x+1/2*e)-3/f^3*b^2*d^3*e*((f*x+e)^2*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/
2*e)-1/2*(f*x+e)*cos(f*x+e)^2+1/4*sin(f*x+e)*cos(f*x+e)+1/4*f*x+1/4*e-1/3*(
f*x+e)^3)+3/f^3*b^2*d^3*e^2*((f*x+e)*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/
2*e)-1/4*(f*x+e)^2+1/4*sin(f*x+e)^2)+2/f^3*a*b*d^3*(-(f*x+e)^3*cos(f*x+e)+3
*(f*x+e)^2*sin(f*x+e)-6*sin(f*x+e)+6*(f*x+e)*cos(f*x+e))+3/f^2*b^2*c*d^2*((
f*x+e)^2*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)-1/2*(f*x+e)*cos(f*x+e)^
2+1/4*sin(f*x+e)*cos(f*x+e)+1/4*f*x+1/4*e-1/3*(f*x+e)^3)+3/f*b^2*c^2*d*((f*
x+e)*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)-1/4*(f*x+e)^2+1/4*sin(f*x+e
)^2)+a^2/f^2*c*d^2*(f*x+e)^3+3/2*a^2/f^3*d^3*e^2*(f*x+e)^2-a^2/f^3*d^3*e*(f
*x+e)^3-3*a^2/f^2*c*d^2*e*(f*x+e)^2+3*a^2/f^2*c*d^2*e^2*(f*x+e)-3*a^2/f*c^2
*d*e*(f*x+e)+6/f^3*a*b*d^3*e^2*(sin(f*x+e)-(f*x+e)*cos(f*x+e))+6/f*a*b*c^2*
d*(sin(f*x+e)-(f*x+e)*cos(f*x+e))+2/f^3*a*b*d^3*e^3*cos(f*x+e)+3/f^2*b^2*c*
d^2*e^2*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)-6/f^3*a*b*d^3*e*(-(f*x+e
)^2*cos(f*x+e)+2*cos(f*x+e)+2*(f*x+e)*sin(f*x+e))-6/f^2*b^2*c*d^2*e*((f*x+e
)*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)-1/4*(f*x+e)^2+1/4*sin(f*x+e)^2
)+6/f^2*a*b*c*d^2*(-(f*x+e)^2*cos(f*x+e)+2*cos(f*x+e)+2*(f*x+e)*sin(f*x+e))
-3/f*b^2*c^2*d*e*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e))
```

maxima [B] time = 0.47, size = 959, normalized size = 3.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3*(a+b*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/16*(16*(f*x + e)*a^2*c^3 + 4*(2*f*x + 2*e - sin(2*f*x + 2*e))*b^2*c^3 + 4
*(f*x + e)^4*a^2*d^3/f^3 - 16*(f*x + e)^3*a^2*d^3*e/f^3 + 24*(f*x + e)^2*a^
2*d^3*e^2/f^3 - 16*(f*x + e)*a^2*d^3*e^3/f^3 - 4*(2*f*x + 2*e - sin(2*f*x +
 2*e))*b^2*d^3*e^3/f^3 + 16*(f*x + e)^3*a^2*c*d^2/f^2 - 48*(f*x + e)^2*a^2*
c*d^2*e/f^2 + 48*(f*x + e)*a^2*c*d^2*e^2/f^2 + 12*(2*f*x + 2*e - sin(2*f*x
+ 2*e))*b^2*c*d^2*e^2/f^2 + 24*(f*x + e)^2*a^2*c^2*d/f - 48*(f*x + e)*a^2*c
^2*d*e/f - 12*(2*f*x + 2*e - sin(2*f*x + 2*e))*b^2*c^2*d*e/f - 32*a*b*c^3*c
os(f*x + e) + 32*a*b*d^3*e^3*cos(f*x + e)/f^3 - 96*a*b*c*d^2*e^2*cos(f*x +
e)/f^2 + 96*a*b*c^2*d*e*cos(f*x + e)/f - 96*((f*x + e)*cos(f*x + e) - sin(f
*x + e))*a*b*d^3*e^2/f^3 + 6*(2*(f*x + e)^2 - 2*(f*x + e)*sin(2*f*x + 2*e)
- cos(2*f*x + 2*e))*b^2*d^3*e^2/f^3 + 192*((f*x + e)*cos(f*x + e) - sin(f*x
 + e))*a*b*c*d^2*e/f^2 - 12*(2*(f*x + e)^2 - 2*(f*x + e)*sin(2*f*x + 2*e) -
 cos(2*f*x + 2*e))*b^2*c*d^2*e/f^2 - 96*((f*x + e)*cos(f*x + e) - sin(f*x +
 e))*a*b*c^2*d/f + 6*(2*(f*x + e)^2 - 2*(f*x + e)*sin(2*f*x + 2*e) - cos(2*
f*x + 2*e))*b^2*c^2*d/f + 96*(((f*x + e)^2 - 2)*cos(f*x + e) - 2*(f*x + e)*
sin(f*x + e))*a*b*d^3*e/f^3 - 2*(4*(f*x + e)^3 - 6*(f*x + e)*cos(2*f*x + 2*
e) - 3*(2*(f*x + e)^2 - 1)*sin(2*f*x + 2*e))*b^2*d^3*e/f^3 - 96*(((f*x + e)
^2 - 2)*cos(f*x + e) - 2*(f*x + e)*sin(f*x + e))*a*b*c*d^2/f^2 + 2*(4*(f*x
+ e)^3 - 6*(f*x + e)*cos(2*f*x + 2*e) - 3*(2*(f*x + e)^2 - 1)*sin(2*f*x + 2
*e))*b^2*c*d^2/f^2 - 32*(((f*x + e)^3 - 6*f*x - 6*e)*cos(f*x + e) - 3*((f*x
 + e)^2 - 2)*sin(f*x + e))*a*b*d^3/f^3 + (2*(f*x + e)^4 - 3*(2*(f*x + e)^2
- 1)*cos(2*f*x + 2*e) - 2*(2*(f*x + e)^3 - 3*f*x - 3*e)*sin(2*f*x + 2*e))*b
^2*d^3/f^3)/f
```

mupad [B] time = 2.64, size = 497, normalized size = 1.99

$$\frac{\frac{3\,b^2\,d^3\,\cos\left(2\,e+2\,f\,x\right)}{2}+8\,a^2\,c^3\,f^4\,x+4\,b^2\,c^3\,f^4\,x-96\,a\,b\,d^3\,\sin\left(e+f\,x\right)-2\,b^2\,c^3\,f^3\,\sin\left(2\,e+2\,f\,x\right)+2\,a^2\,d^3\,f^4\,x^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))^2*(c + d*x)^3,x)
```

```
[Out] ((3*b^2*d^3*cos(2*e + 2*f*x))/2 + 8*a^2*c^3*f^4*x + 4*b^2*c^3*f^4*x - 96*a*
b*d^3*sin(e + f*x) - 2*b^2*c^3*f^3*sin(2*e + 2*f*x) + 2*a^2*d^3*f^4*x^4 + b
^2*d^3*f^4*x^4 - 16*a*b*c^3*f^3*cos(e + f*x) - 3*b^2*d^3*f^2*x^2*cos(2*e +
2*f*x) - 2*b^2*d^3*f^3*x^3*sin(2*e + 2*f*x) + 3*b^2*c*d^2*f*sin(2*e + 2*f*x
) + 3*b^2*d^3*f*x*sin(2*e + 2*f*x) - 3*b^2*c^2*d*f^2*cos(2*e + 2*f*x) + 12*
a^2*c^2*d*f^4*x^2 + 8*a^2*c*d^2*f^4*x^3 + 6*b^2*c^2*d*f^4*x^2 + 4*b^2*c*d^2
*f^4*x^3 + 96*a*b*c*d^2*f*cos(e + f*x) + 96*a*b*d^3*f*x*cos(e + f*x) - 6*b^
2*c*d^2*f^2*x*cos(2*e + 2*f*x) - 6*b^2*c^2*d*f^3*x*sin(2*e + 2*f*x) + 48*a*
b*c^2*d*f^2*sin(e + f*x) - 6*b^2*c*d^2*f^3*x^2*sin(2*e + 2*f*x) - 16*a*b*d^
3*f^3*x^3*cos(e + f*x) + 48*a*b*d^3*f^2*x^2*sin(e + f*x) - 48*a*b*c*d^2*f^3
*x^2*cos(e + f*x) - 48*a*b*c^2*d*f^3*x*cos(e + f*x) + 96*a*b*c*d^2*f^2*x*si
n(e + f*x))/(8*f^4)
```

sympy [A] time = 4.96, size = 779, normalized size = 3.12

$$\begin{cases} a^2c^3x + \frac{3a^2c^2dx^2}{2} + a^2cd^2x^3 + \frac{a^2d^3x^4}{4} - \frac{2abc^3\cos(e+fx)}{f} - \frac{6abc^2dx\cos(e+fx)}{f} + \frac{6abc^2d\sin(e+fx)}{f^2} - \frac{6abcd^2x^2\cos(e+fx)}{f} + \frac{12abcd}{} \\ (a+b\sin(e))^2\left(c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3*(a+b*sin(f*x+e))**2,x)
```

```
[Out] Piecewise((a**2*c**3*x + 3*a**2*c**2*d*x**2/2 + a**2*c*d**2*x**3 + a**2*d**
3*x**4/4 - 2*a*b*c**3*cos(e + f*x)/f - 6*a*b*c**2*d*x*cos(e + f*x)/f + 6*a*
b*c**2*d*sin(e + f*x)/f**2 - 6*a*b*c*d**2*x**2*cos(e + f*x)/f + 12*a*b*c*d*
*2*x*sin(e + f*x)/f**2 + 12*a*b*c*d**2*cos(e + f*x)/f**3 - 2*a*b*d**3*x**3*
cos(e + f*x)/f + 6*a*b*d**3*x**2*sin(e + f*x)/f**2 + 12*a*b*d**3*x*cos(e +
f*x)/f**3 - 12*a*b*d**3*sin(e + f*x)/f**4 + b**2*c**3*x*sin(e + f*x)**2/2 +
 b**2*c**3*x*cos(e + f*x)**2/2 - b**2*c**3*sin(e + f*x)*cos(e + f*x)/(2*f)
+ 3*b**2*c**2*d*x**2*sin(e + f*x)**2/4 + 3*b**2*c**2*d*x**2*cos(e + f*x)**2
/4 - 3*b**2*c**2*d*x*sin(e + f*x)*cos(e + f*x)/(2*f) - 3*b**2*c**2*d*cos(e
+ f*x)**2/(4*f**2) + b**2*c*d**2*x**3*sin(e + f*x)**2/2 + b**2*c*d**2*x**3*
cos(e + f*x)**2/2 - 3*b**2*c*d**2*x**2*sin(e + f*x)*cos(e + f*x)/(2*f) + 3*
b**2*c*d**2*x*sin(e + f*x)**2/(4*f**2) - 3*b**2*c*d**2*x*cos(e + f*x)**2/(4
*f**2) + 3*b**2*c*d**2*sin(e + f*x)*cos(e + f*x)/(4*f**3) + b**2*d**3*x**4*
sin(e + f*x)**2/8 + b**2*d**3*x**4*cos(e + f*x)**2/8 - b**2*d**3*x**3*sin(e
 + f*x)*cos(e + f*x)/(2*f) + 3*b**2*d**3*x**2*sin(e + f*x)**2/(8*f**2) - 3*
b**2*d**3*x**2*cos(e + f*x)**2/(8*f**2) + 3*b**2*d**3*x*sin(e + f*x)*cos(e
+ f*x)/(4*f**3) + 3*b**2*d**3*cos(e + f*x)**2/(8*f**4), Ne(f, 0)), ((a + b*
sin(e))**2*(c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3 + d**3*x**4/4), True))
```

3.158 $\int (c+dx)^2(a+b\sin(e+fx))^2\,dx$

Optimal. Leaf size=182

$$\frac{a^2(c+dx)^3}{3d}+\frac{4abd(c+dx)\sin(e+fx)}{f^2}-\frac{2ab(c+dx)^2\cos(e+fx)}{f}+\frac{4abd^2\cos(e+fx)}{f^3}+\frac{b^2d(c+dx)\sin^2(e+fx)}{2f^2}$$

```
[Out] -1/4*b^2*d^2*x/f^2+1/3*a^2*(d*x+c)^3/d+1/6*b^2*(d*x+c)^3/d+4*a*b*d^2*cos(f*
x+e)/f^3-2*a*b*(d*x+c)^2*cos(f*x+e)/f+4*a*b*d*(d*x+c)*sin(f*x+e)/f^2+1/4*b^
2*d^2*cos(f*x+e)*sin(f*x+e)/f^3-1/2*b^2*(d*x+c)^2*cos(f*x+e)*sin(f*x+e)/f+1
/2*b^2*d*(d*x+c)*sin(f*x+e)^2/f^2
```

Rubi [A] time = 0.19, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {3317, 3296, 2638, 3311, 32, 2635, 8}

$$\frac{a^2(c+dx)^3}{3d}+\frac{4abd(c+dx)\sin(e+fx)}{f^2}-\frac{2ab(c+dx)^2\cos(e+fx)}{f}+\frac{4abd^2\cos(e+fx)}{f^3}+\frac{b^2d(c+dx)\sin^2(e+fx)}{2f^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2*(a + b*Sin[e + f*x])^2,x]
```

```
[Out] -(b^2*d^2*x)/(4*f^2) + (a^2*(c + d*x)^3)/(3*d) + (b^2*(c + d*x)^3)/(6*d) +
(4*a*b*d^2*Cos[e + f*x])/f^3 - (2*a*b*(c + d*x)^2*Cos[e + f*x])/f + (4*a*b*
d*(c + d*x)*Sin[e + f*x])/f^2 + (b^2*d^2*Cos[e + f*x]*Sin[e + f*x])/(4*f^3)
 - (b^2*(c + d*x)^2*Cos[e + f*x]*Sin[e + f*x])/(2*f) + (b^2*d*(c + d*x)*Sin
[e + f*x]^2)/(2*f^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^2(a+b\sin(e+fx))^2\,dx = \int \left(a^2(c+dx)^2+2ab(c+dx)^2\sin(e+fx)+b^2(c+dx)^2\sin^2(e+fx)\right)dx$$

$$= \frac{a^2(c+dx)^3}{3d}+(2ab)\int (c+dx)^2\sin(e+fx)\,dx+b^2\int (c+dx)^2\sin^2(e+fx)$$

$$= \frac{a^2(c+dx)^3}{3d}-\frac{2ab(c+dx)^2\cos(e+fx)}{f}-\frac{b^2(c+dx)^2\cos(e+fx)\sin(e+fx}{2f}$$

$$= \frac{a^2(c+dx)^3}{3d}+\frac{b^2(c+dx)^3}{6d}-\frac{2ab(c+dx)^2\cos(e+fx)}{f}+\frac{4abd(c+dx)\sin(e}{f^2}$$

$$= -\frac{b^2d^2x}{4f^2}+\frac{a^2(c+dx)^3}{3d}+\frac{b^2(c+dx)^3}{6d}+\frac{4abd^2\cos(e+fx)}{f^3}-\frac{2ab(c+dx)^2\,\mathrm{co}}{f}$$

Mathematica [A] time = 0.90, size = 249, normalized size = 1.37

$$\frac{24a^2c^2f^3x+24a^2cdf^3x^2+8a^2d^2f^3x^3-48ab\left(c^2f^2+2cdf^2x+d^2\left(f^2x^2-2\right)\right)\cos(e+fx)+96abcdf\sin(e+f$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2*(a + b*Sin[e + f*x])^2,x]
```

```
[Out] (24*a^2*c^2*f^3*x + 12*b^2*c^2*f^3*x + 24*a^2*c*d*f^3*x^2 + 12*b^2*c*d*f^3*
x^2 + 8*a^2*d^2*f^3*x^3 + 4*b^2*d^2*f^3*x^3 - 48*a*b*(c^2*f^2 + 2*c*d*f^2*x
 + d^2*(-2 + f^2*x^2))*Cos[e + f*x] - 6*b^2*d*f*(c + d*x)*Cos[2*(e + f*x)]
+ 96*a*b*c*d*f*Sin[e + f*x] + 96*a*b*d^2*f*x*Sin[e + f*x] + 3*b^2*d^2*Sin[2
*(e + f*x)] - 6*b^2*c^2*f^2*Sin[2*(e + f*x)] - 12*b^2*c*d*f^2*x*Sin[2*(e +
f*x)] - 6*b^2*d^2*f^2*x^2*Sin[2*(e + f*x)])/(24*f^3)
```

fricas [A] time = 0.63, size = 226, normalized size = 1.24

$$\frac{2\left(2a^2+b^2\right)d^2f^3x^3+6\left(2a^2+b^2\right)cdf^3x^2-6\left(b^2d^2fx+b^2cdf\right)\cos\left(fx+e\right)^2+3\left(2\left(2a^2+b^2\right)c^2f^3+b^2d^2f\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/12*(2*(2*a^2 + b^2)*d^2*f^3*x^3 + 6*(2*a^2 + b^2)*c*d*f^3*x^2 - 6*(b^2*d^
2*f*x + b^2*c*d*f)*cos(f*x + e)^2 + 3*(2*(2*a^2 + b^2)*c^2*f^3 + b^2*d^2*f)
*x - 24*(a*b*d^2*f^2*x^2 + 2*a*b*c*d*f^2*x + a*b*c^2*f^2 - 2*a*b*d^2)*cos(f
*x + e) + 3*(16*a*b*d^2*f*x + 16*a*b*c*d*f - (2*b^2*d^2*f^2*x^2 + 4*b^2*c*d
*f^2*x + 2*b^2*c^2*f^2 - b^2*d^2)*cos(f*x + e))*sin(f*x + e))/f^3
```

giac [A] time = 0.34, size = 229, normalized size = 1.26

$$\frac{1}{3}a^2d^2x^3+\frac{1}{6}b^2d^2x^3+a^2cdx^2+\frac{1}{2}b^2cdx^2+a^2c^2x+\frac{1}{2}b^2c^2x-\frac{\left(b^2d^2fx+b^2cdf\right)\cos\left(2fx+2e\right)}{4f^3}-\frac{2\left(abd^2f^2x^2+2abc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/3*a^2*d^2*x^3 + 1/6*b^2*d^2*x^3 + a^2*c*d*x^2 + 1/2*b^2*c*d*x^2 + a^2*c^2
*x + 1/2*b^2*c^2*x - 1/4*(b^2*d^2*f*x + b^2*c*d*f)*cos(2*f*x + 2*e)/f^3 - 2
*(a*b*d^2*f^2*x^2 + 2*a*b*c*d*f^2*x + a*b*c^2*f^2 - 2*a*b*d^2)*cos(f*x + e)
/f^3 - 1/8*(2*b^2*d^2*f^2*x^2 + 4*b^2*c*d*f^2*x + 2*b^2*c^2*f^2 - b^2*d^2)*
sin(2*f*x + 2*e)/f^3 + 4*(a*b*d^2*f*x + a*b*c*d*f)*sin(f*x + e)/f^3
```

maple [B] time = 0.04, size = 561, normalized size = 3.08

$$\frac{\frac{a^2d^2(fx+e)^3}{3f^2}+\frac{a^2cd(fx+e)^2}{f}-\frac{a^2d^2e(fx+e)^2}{f^2}+a^2c^2(fx+e)-\frac{2a^2cde(fx+e)}{f}+\frac{a^2d^2e^2(fx+e)}{f^2}+\frac{2ab\,d^2\left(-(fx+e)^2\cos(fx+e)+2\cos(fx+e\right.}{f^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2*(a+b*sin(f*x+e))^2,x)
```

```
[Out] 1/f*(1/3*a^2/f^2*d^2*(f*x+e)^3+a^2/f*c*d*(f*x+e)^2-a^2/f^2*d^2*e*(f*x+e)^2+
a^2*c^2*(f*x+e)-2*a^2/f*c*d*e*(f*x+e)+a^2/f^2*d^2*e^2*(f*x+e)+2/f^2*a*b*d^2
*(-(f*x+e)^2*cos(f*x+e)+2*cos(f*x+e)+2*(f*x+e)*sin(f*x+e))+4/f*a*b*c*d*(sin
(f*x+e)-(f*x+e)*cos(f*x+e))-4/f^2*a*b*d^2*e*(sin(f*x+e)-(f*x+e)*cos(f*x+e))
-2*a*b*c^2*cos(f*x+e)+4/f*a*b*c*d*e*cos(f*x+e)-2/f^2*a*b*d^2*e^2*cos(f*x+e)
+1/f^2*b^2*d^2*((f*x+e)^2*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)-1/2*(f
*x+e)*cos(f*x+e)^2+1/4*sin(f*x+e)*cos(f*x+e)+1/4*f*x+1/4*e-1/3*(f*x+e)^3)+2
/f*b^2*c*d*((f*x+e)*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)-1/4*(f*x+e)^
2+1/4*sin(f*x+e)^2)-2/f^2*b^2*d^2*e*((f*x+e)*(-1/2*sin(f*x+e)*cos(f*x+e)+1/
2*f*x+1/2*e)-1/4*(f*x+e)^2+1/4*sin(f*x+e)^2)+b^2*c^2*(-1/2*sin(f*x+e)*cos(f
*x+e)+1/2*f*x+1/2*e)-2/f*b^2*c*d*e*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*
e)+1/f^2*b^2*d^2*e^2*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e))
```

maxima [B] time = 0.44, size = 502, normalized size = 2.76

$$\frac{24\left(fx+e\right)a^2c^2+6\left(2\,fx+2\,e-\sin\left(2\,fx+2\,e\right)\right)b^2c^2+\frac{8\left(fx+e\right)^3a^2d^2}{f^2}-\frac{24\left(fx+e\right)^2a^2d^2e}{f^2}+\frac{24\left(fx+e\right)a^2d^2e^2}{f^2}+\frac{6\left(2\,fx+2\,e-\mathrm{si}\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2*(a+b*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/24*(24*(f*x + e)*a^2*c^2 + 6*(2*f*x + 2*e - sin(2*f*x + 2*e))*b^2*c^2 + 8
*(f*x + e)^3*a^2*d^2/f^2 - 24*(f*x + e)^2*a^2*d^2*e/f^2 + 24*(f*x + e)*a^2*
d^2*e^2/f^2 + 6*(2*f*x + 2*e - sin(2*f*x + 2*e))*b^2*d^2*e^2/f^2 + 24*(f*x
+ e)^2*a^2*c*d/f - 48*(f*x + e)*a^2*c*d*e/f - 12*(2*f*x + 2*e - sin(2*f*x +
 2*e))*b^2*c*d*e/f - 48*a*b*c^2*cos(f*x + e) - 48*a*b*d^2*e^2*cos(f*x + e)/
f^2 + 96*a*b*c*d*e*cos(f*x + e)/f + 96*((f*x + e)*cos(f*x + e) - sin(f*x +
e))*a*b*d^2*e/f^2 - 6*(2*(f*x + e)^2 - 2*(f*x + e)*sin(2*f*x + 2*e) - cos(2
*f*x + 2*e))*b^2*d^2*e/f^2 - 96*((f*x + e)*cos(f*x + e) - sin(f*x + e))*a*b
*c*d/f + 6*(2*(f*x + e)^2 - 2*(f*x + e)*sin(2*f*x + 2*e) - cos(2*f*x + 2*e)
)*b^2*c*d/f - 48*(((f*x + e)^2 - 2)*cos(f*x + e) - 2*(f*x + e)*sin(f*x + e)
)*a*b*d^2/f^2 + (4*(f*x + e)^3 - 6*(f*x + e)*cos(2*f*x + 2*e) - 3*(2*(f*x +
 e)^2 - 1)*sin(2*f*x + 2*e))*b^2*d^2/f^2)/f
```

mupad [B] time = 1.15, size = 281, normalized size = 1.54

$$a^2\,c^2\,x+\frac{b^2\,c^2\,x}{2}+\frac{a^2\,d^2\,x^3}{3}+\frac{b^2\,d^2\,x^3}{6}-\frac{b^2\,c^2\,\sin\left(2\,e+2\,f\,x\right)}{4\,f}+\frac{b^2\,d^2\,\sin\left(2\,e+2\,f\,x\right)}{8\,f^3}+a^2\,c\,d\,x^2+\frac{b^2\,c\,d\,x^2}{2}-\frac{2\,a\,b\,c^2\,c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))^2*(c + d*x)^2,x)
```

```
[Out] a^2*c^2*x + (b^2*c^2*x)/2 + (a^2*d^2*x^3)/3 + (b^2*d^2*x^3)/6 - (b^2*c^2*si
n(2*e + 2*f*x))/(4*f) + (b^2*d^2*sin(2*e + 2*f*x))/(8*f^3) + a^2*c*d*x^2 +
(b^2*c*d*x^2)/2 - (2*a*b*c^2*cos(e + f*x))/f + (4*a*b*d^2*cos(e + f*x))/f^3
 - (b^2*d^2*x^2*sin(2*e + 2*f*x))/(4*f) - (b^2*c*d*cos(2*e + 2*f*x))/(4*f^2
) - (b^2*d^2*x*cos(2*e + 2*f*x))/(4*f^2) + (4*a*b*c*d*sin(e + f*x))/f^2 + (
4*a*b*d^2*x*sin(e + f*x))/f^2 - (2*a*b*d^2*x^2*cos(e + f*x))/f - (b^2*c*d*x
*sin(2*e + 2*f*x))/(2*f) - (4*a*b*c*d*x*cos(e + f*x))/f
```

sympy [A] time = 2.22, size = 456, normalized size = 2.51

$$\begin{cases} a^2c^2x + a^2cdx^2 + \frac{a^2d^2x^3}{3} - \frac{2abc^2\cos\left(e+fx\right)}{f} - \frac{4abcdx\cos\left(e+fx\right)}{f} + \frac{4abcd\sin\left(e+fx\right)}{f^2} - \frac{2abd^2x^2\cos\left(e+fx\right)}{f} + \frac{4abd^2x\sin\left(e+fx\right)}{f^2} + \\ \left(a+b\sin\left(e\right)\right)^2\left(c^2x + cdx^2 + \frac{d^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2*(a+b*sin(f*x+e))**2,x)
```

```
[Out] Piecewise((a**2*c**2*x + a**2*c*d*x**2 + a**2*d**2*x**3/3 - 2*a*b*c**2*cos(
e + f*x)/f - 4*a*b*c*d*x*cos(e + f*x)/f + 4*a*b*c*d*sin(e + f*x)/f**2 - 2*a
*b*d**2*x**2*cos(e + f*x)/f + 4*a*b*d**2*x*sin(e + f*x)/f**2 + 4*a*b*d**2*c
os(e + f*x)/f**3 + b**2*c**2*x*sin(e + f*x)**2/2 + b**2*c**2*x*cos(e + f*x)
**2/2 - b**2*c**2*sin(e + f*x)*cos(e + f*x)/(2*f) + b**2*c*d*x**2*sin(e + f
*x)**2/2 + b**2*c*d*x**2*cos(e + f*x)**2/2 - b**2*c*d*x*sin(e + f*x)*cos(e
+ f*x)/f - b**2*c*d*cos(e + f*x)**2/(2*f**2) + b**2*d**2*x**3*sin(e + f*x)*
*2/6 + b**2*d**2*x**3*cos(e + f*x)**2/6 - b**2*d**2*x**2*sin(e + f*x)*cos(e
 + f*x)/(2*f) + b**2*d**2*x*sin(e + f*x)**2/(4*f**2) - b**2*d**2*x*cos(e +
f*x)**2/(4*f**2) + b**2*d**2*sin(e + f*x)*cos(e + f*x)/(4*f**3), Ne(f, 0)),
 ((a + b*sin(e))**2*(c**2*x + c*d*x**2 + d**2*x**3/3), True))
```

3.159 $\int (c+dx)(a+b\sin(e+fx))^2\,dx$

Optimal. Leaf size=116

$$\frac{a^2(c+dx)^2}{2d}-\frac{2ab(c+dx)\cos(e+fx)}{f}+\frac{2abd\sin(e+fx)}{f^2}-\frac{b^2(c+dx)\sin(e+fx)\cos(e+fx)}{2f}+\frac{1}{2}b^2cx+\frac{b^2d\sin^2(e+$$

```
[Out] 1/2*b^2*c*x+1/4*b^2*d*x^2+1/2*a^2*(d*x+c)^2/d-2*a*b*(d*x+c)*cos(f*x+e)/f+2*
a*b*d*sin(f*x+e)/f^2-1/2*b^2*(d*x+c)*cos(f*x+e)*sin(f*x+e)/f+1/4*b^2*d*sin(
f*x+e)^2/f^2
```

Rubi [A] time = 0.10, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {3317, 3296, 2637, 3310}

$$\frac{a^2(c+dx)^2}{2d}-\frac{2ab(c+dx)\cos(e+fx)}{f}+\frac{2abd\sin(e+fx)}{f^2}-\frac{b^2(c+dx)\sin(e+fx)\cos(e+fx)}{2f}+\frac{1}{2}b^2cx+\frac{b^2d\sin^2(e+$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)*(a + b*Sin[e + f*x])^2,x]
```

```
[Out] (b^2*c*x)/2 + (b^2*d*x^2)/4 + (a^2*(c + d*x)^2)/(2*d) - (2*a*b*(c + d*x)*Co
s[e + f*x])/f + (2*a*b*d*Sin[e + f*x])/f^2 - (b^2*(c + d*x)*Cos[e + f*x]*Si
n[e + f*x])/(2*f) + (b^2*d*Sin[e + f*x]^2)/(4*f^2)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)(a+b\sin(e+fx))^2\,dx = \int \left(a^2(c+dx)+2ab(c+dx)\sin(e+fx)+b^2(c+dx)\sin^2(e+fx)\right)\,dx$$
$$= \frac{a^2(c+dx)^2}{2d}+(2ab)\int (c+dx)\sin(e+fx)\,dx+b^2\int (c+dx)\sin^2(e+fx)\,d$$
$$= \frac{a^2(c+dx)^2}{2d}-\frac{2ab(c+dx)\cos(e+fx)}{f}-\frac{b^2(c+dx)\cos(e+fx)\sin(e+fx)}{2f}$$
$$= \frac{1}{2}b^2cx+\frac{1}{4}b^2dx^2+\frac{a^2(c+dx)^2}{2d}-\frac{2ab(c+dx)\cos(e+fx)}{f}+\frac{2abd\sin(e+f}{f^2}$$

Mathematica [A] time = 0.73, size = 96, normalized size = 0.83

$$-\frac{2\left(2a^2+b^2\right)(e+fx)(d(e-fx)-2cf)+16abf(c+dx)\cos(e+fx)-16abd\sin(e+fx)+2b^2f(c+dx)\sin(2(e}{8f^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)*(a + b*Sin[e + f*x])^2,x]
```

```
[Out] -1/8*(2*(2*a^2 + b^2)*(e + f*x)*(-2*c*f + d*(e - f*x)) + 16*a*b*f*(c + d*x)
*Cos[e + f*x] + b^2*d*Cos[2*(e + f*x)] - 16*a*b*d*Sin[e + f*x] + 2*b^2*f*(c
 + d*x)*Sin[2*(e + f*x)])/f^2
```

fricas [A] time = 0.61, size = 109, normalized size = 0.94

$$\frac{\left(2\,a^2+b^2\right)df^2x^2+2\left(2\,a^2+b^2\right)cf^2x-b^2d\cos\left(fx+e\right)^2-8\left(abdfx+abcf\right)\cos\left(fx+e\right)+2\left(4\,abd-\left(b^2dfx\right.\right.}{4\,f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/4*((2*a^2 + b^2)*d*f^2*x^2 + 2*(2*a^2 + b^2)*c*f^2*x - b^2*d*cos(f*x + e)
^2 - 8*(a*b*d*f*x + a*b*c*f)*cos(f*x + e) + 2*(4*a*b*d - (b^2*d*f*x + b^2*c
*f)*cos(f*x + e))*sin(f*x + e))/f^2
```

giac [A] time = 0.97, size = 119, normalized size = 1.03

$$\frac{1}{2}a^2dx^2+\frac{1}{4}b^2dx^2+a^2cx+\frac{1}{2}b^2cx-\frac{b^2d\cos\left(2fx+2e\right)}{8f^2}+\frac{2abd\sin\left(fx+e\right)}{f^2}-\frac{2\left(abdfx+abcf\right)\cos\left(fx+e\right)}{f^2}-\frac{\left(b^2df\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] 1/2*a^2*d*x^2 + 1/4*b^2*d*x^2 + a^2*c*x + 1/2*b^2*c*x - 1/8*b^2*d*cos(2*f*x
 + 2*e)/f^2 + 2*a*b*d*sin(f*x + e)/f^2 - 2*(a*b*d*f*x + a*b*c*f)*cos(f*x +
e)/f^2 - 1/4*(b^2*d*f*x + b^2*c*f)*sin(2*f*x + 2*e)/f^2
```

maple [B] time = 0.04, size = 216, normalized size = 1.86

$$\frac{\frac{a^2d\left(fx+e\right)^2}{2f}+a^2c\left(fx+e\right)-\frac{a^2de\left(fx+e\right)}{f}+\frac{2abd\left(\sin\left(fx+e\right)-\left(fx+e\right)\cos\left(fx+e\right)\right)}{f}-2abc\cos\left(fx+e\right)+\frac{2abde\cos\left(fx+e\right)}{f}+\frac{b^2d\left(\left(fx+\right.\right.}{}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)*(a+b*sin(f*x+e))^2,x)
```

```
[Out] 1/f*(1/2*a^2/f*d*(f*x+e)^2+a^2*c*(f*x+e)-a^2/f*d*e*(f*x+e)+2/f*a*b*d*(sin(f
*x+e)-(f*x+e)*cos(f*x+e))-2*a*b*c*cos(f*x+e)+2/f*a*b*d*e*cos(f*x+e)+1/f*b^2
*d*((f*x+e)*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)-1/4*(f*x+e)^2+1/4*si
n(f*x+e)^2)+b^2*c*(-1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e)-1/f*b^2*d*e*(-
1/2*sin(f*x+e)*cos(f*x+e)+1/2*f*x+1/2*e))
```

maxima [A] time = 0.56, size = 202, normalized size = 1.74

$$\frac{8\left(fx+e\right)a^2c+2\left(2fx+2e-\sin\left(2fx+2e\right)\right)b^2c+\frac{4\left(fx+e\right)^2a^2d}{f}-\frac{8\left(fx+e\right)a^2de}{f}-\frac{2\left(2fx+2e-\sin\left(2fx+2e\right)\right)b^2de}{f}-16abc}{8f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] 1/8*(8*(f*x + e)*a^2*c + 2*(2*f*x + 2*e - sin(2*f*x + 2*e))*b^2*c + 4*(f*x
+ e)^2*a^2*d/f - 8*(f*x + e)*a^2*d*e/f - 2*(2*f*x + 2*e - sin(2*f*x + 2*e))
*b^2*d*e/f - 16*a*b*c*cos(f*x + e) + 16*a*b*d*e*cos(f*x + e)/f - 16*((f*x +
 e)*cos(f*x + e) - sin(f*x + e))*a*b*d/f + (2*(f*x + e)^2 - 2*(f*x + e)*sin
(2*f*x + 2*e) - cos(2*f*x + 2*e))*b^2*d/f)/f
```

mupad [B] time = 0.74, size = 143, normalized size = 1.23

$$\frac{a^2\,d\,x^2}{2}+\frac{b^2\,d\,x^2}{4}+a^2\,c\,x+\frac{b^2\,c\,x}{2}-\frac{b^2\,c\,\sin\left(2\,e+2\,f\,x\right)}{4\,f}+\frac{b^2\,d\,\sin\left(e+f\,x\right)^2}{4\,f^2}+\frac{4\,a\,b\,c\,\sin\left(\frac{e}{2}+\frac{f\,x}{2}\right)^2}{f}-\frac{b^2\,d\,x\,\sin\left(2\,e+\right.}{4\,f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))^2*(c + d*x),x)
```

```
[Out] (a^2*d*x^2)/2 + (b^2*d*x^2)/4 + a^2*c*x + (b^2*c*x)/2 - (b^2*c*sin(2*e + 2*
f*x))/(4*f) + (b^2*d*sin(e + f*x)^2)/(4*f^2) + (4*a*b*c*sin(e/2 + (f*x)/2)^
2)/f - (b^2*d*x*sin(2*e + 2*f*x))/(4*f) + (2*a*b*d*sin(e + f*x))/f^2 + (2*a
*b*d*x*(2*sin(e/2 + (f*x)/2)^2 - 1))/f
```

sympy [A] time = 0.86, size = 219, normalized size = 1.89

$$\begin{cases} a^2cx+\frac{a^2dx^2}{2}-\frac{2abc\cos\left(e+fx\right)}{f}-\frac{2abdx\cos\left(e+fx\right)}{f}+\frac{2abd\sin\left(e+fx\right)}{f^2}+\frac{b^2cx\sin^2\left(e+fx\right)}{2}+\frac{b^2cx\cos^2\left(e+fx\right)}{2}-\frac{b^2c\sin\left(e+fx\right)\cos\left(e+\right.}{2f} \\ (a+b\sin(e))^2\left(cx+\frac{dx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)*(a+b*sin(f*x+e))**2,x)
```

```
[Out] Piecewise((a**2*c*x + a**2*d*x**2/2 - 2*a*b*c*cos(e + f*x)/f - 2*a*b*d*x*co
s(e + f*x)/f + 2*a*b*d*sin(e + f*x)/f**2 + b**2*c*x*sin(e + f*x)**2/2 + b**
2*c*x*cos(e + f*x)**2/2 - b**2*c*sin(e + f*x)*cos(e + f*x)/(2*f) + b**2*d*x
**2*sin(e + f*x)**2/4 + b**2*d*x**2*cos(e + f*x)**2/4 - b**2*d*x*sin(e + f*
x)*cos(e + f*x)/(2*f) - b**2*d*cos(e + f*x)**2/(4*f**2), Ne(f, 0)), ((a + b
*sin(e))**2*(c*x + d*x**2/2), True))
```

3.160 $\int \frac{(a+b\sin(e+fx))^2}{c+dx}\,dx$

Optimal. Leaf size=156

$$\frac{a^2\log(c+dx)}{d}+\frac{2ab\text{Ci}\left(xf+\frac{cf}{d}\right)\sin\left(e-\frac{cf}{d}\right)}{d}+\frac{2ab\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d}-\frac{b^2\text{Ci}\left(2xf+\frac{2cf}{d}\right)\cos\left(2e-\frac{2cf}{d}\right)}{2d}+\frac{b^2 \cdots}{}$$

```
[Out] -1/2*b^2*Ci(2*c*f/d+2*f*x)*cos(-2*e+2*c*f/d)/d+a^2*ln(d*x+c)/d+1/2*b^2*ln(d
*x+c)/d+2*a*b*cos(-e+c*f/d)*Si(c*f/d+f*x)/d-1/2*b^2*Si(2*c*f/d+2*f*x)*sin(-
2*e+2*c*f/d)/d-2*a*b*Ci(c*f/d+f*x)*sin(-e+c*f/d)/d
```

Rubi [A] time = 0.32, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3317, 3303, 3299, 3302, 3312}

$$\frac{a^2\log(c+dx)}{d}+\frac{2ab\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d}+\frac{2ab\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d}-\frac{b^2\text{CosIntegral}\left(\frac{2cf}{d}+2f\cdots\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sin[e + f*x])^2/(c + d*x),x]
```

```
[Out] -(b^2*Cos[2*e - (2*c*f)/d]*CosIntegral[(2*c*f)/d + 2*f*x])/(2*d) + (a^2*Log
[c + d*x])/d + (b^2*Log[c + d*x])/(2*d) + (2*a*b*CosIntegral[(c*f)/d + f*x]
*Sin[e - (c*f)/d])/d + (2*a*b*Cos[e - (c*f)/d]*SinIntegral[(c*f)/d + f*x])/
d + (b^2*Sin[2*e - (2*c*f)/d]*SinIntegral[(2*c*f)/d + 2*f*x])/(2*d)
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
```

```
NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int \frac{(a+b\sin(e+fx))^2}{c+dx}\,dx = \int \left(\frac{a^2}{c+dx}+\frac{2ab\sin(e+fx)}{c+dx}+\frac{b^2\sin^2(e+fx)}{c+dx}\right)dx$$

$$= \frac{a^2\log(c+dx)}{d}+(2ab)\int \frac{\sin(e+fx)}{c+dx}\,dx+b^2\int \frac{\sin^2(e+fx)}{c+dx}\,dx$$

$$= \frac{a^2\log(c+dx)}{d}+b^2\int \left(\frac{1}{2(c+dx)}-\frac{\cos(2e+2fx)}{2(c+dx)}\right)dx+\left(2ab\cos\left(e-\frac{cf}{d}\right)\right)\int \frac{\text{si}}{—}$$

$$= \frac{a^2\log(c+dx)}{d}+\frac{b^2\log(c+dx)}{2d}+\frac{2ab\text{Ci}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d}+\frac{2ab\cos\left(e-\frac{cf}{d}\right)}{d}$$

$$= \frac{a^2\log(c+dx)}{d}+\frac{b^2\log(c+dx)}{2d}+\frac{2ab\text{Ci}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d}+\frac{2ab\cos\left(e-\frac{cf}{d}\right)}{d}$$

$$= -\frac{b^2\cos\left(2e-\frac{2cf}{d}\right)\text{Ci}\left(\frac{2cf}{d}+2fx\right)}{2d}+\frac{a^2\log(c+dx)}{d}+\frac{b^2\log(c+dx)}{2d}+\frac{2ab\text{Ci}\left(\frac{cf}{d}\right.}{}$$

Mathematica [A] time = 0.34, size = 134, normalized size = 0.86

$$\frac{2a^2\log(c+dx)+4ab\text{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\sin\left(e-\frac{cf}{d}\right)+4ab\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(f\left(\frac{c}{d}+x\right)\right)-b^2\text{Ci}\left(\frac{2f(c+dx)}{d}\right)\cos\left(2e-\frac{2cf}{d}\right.}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sin[e + f*x])^2/(c + d*x),x]
```

```
[Out] (-(b^2*Cos[2*e - (2*c*f)/d]*CosIntegral[(2*f*(c + d*x))/d]) + 2*a^2*Log[c +
 d*x] + b^2*Log[c + d*x] + 4*a*b*CosIntegral[f*(c/d + x)]*Sin[e - (c*f)/d]
+ 4*a*b*Cos[e - (c*f)/d]*SinIntegral[f*(c/d + x)] + b^2*Sin[2*e - (2*c*f)/d
]*SinIntegral[(2*f*(c + d*x))/d])/(2*d)
```

fricas [A] time = 0.66, size = 189, normalized size = 1.21

$$-\frac{2\,b^2 \sin\left(-\frac{2\left(de-cf\right)}{d}\right)\operatorname{Si}\left(\frac{2\left(dfx+cf\right)}{d}\right) - 8\,ab\cos\left(-\frac{de-cf}{d}\right)\operatorname{Si}\left(\frac{dfx+cf}{d}\right) + \left(b^2\operatorname{Ci}\left(\frac{2\left(dfx+cf\right)}{d}\right) + b^2\operatorname{Ci}\left(-\frac{2\left(dfx+cf\right)}{d}\right)\right)\cos}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))^2/(d*x+c),x, algorithm="fricas")
```

```
[Out] -1/4*(2*b^2*sin(-2*(d*e - c*f)/d)*sin_integral(2*(d*f*x + c*f)/d) - 8*a*b*c
os(-(d*e - c*f)/d)*sin_integral((d*f*x + c*f)/d) + (b^2*cos_integral(2*(d*f
*x + c*f)/d) + b^2*cos_integral(-2*(d*f*x + c*f)/d))*cos(-2*(d*e - c*f)/d)
- 2*(2*a^2 + b^2)*log(d*x + c) + 4*(a*b*cos_integral((d*f*x + c*f)/d) + a*b
*cos_integral(-(d*f*x + c*f)/d))*sin(-(d*e - c*f)/d))/d
```

giac [C] time = 1.72, size = 7397, normalized size = 47.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))^2/(d*x+c),x, algorithm="giac")
```

```
[Out] 1/4*(4*a*b*imag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)
^2*tan(1/2*e)^2*tan(e)^2 - 4*a*b*imag_part(cos_integral(-f*x - c*f/d))*tan(
c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 4*a^2*log(abs(d*x + c))*t
an(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 2*b^2*log(abs(d*x + c)
)*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - b^2*real_part(cos_i
ntegral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)
^2 - b^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f
/d)^2*tan(1/2*e)^2*tan(e)^2 + 8*a*b*sin_integral((d*f*x + c*f)/d)*tan(c*f/d
)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - 2*b^2*imag_part(cos_integral(2
*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e) + 2*b^2*
imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan
(1/2*e)^2*tan(e) - 4*b^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1
/2*c*f/d)^2*tan(1/2*e)^2*tan(e) - 8*a*b*real_part(cos_integral(f*x + c*f/d)
)*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)*tan(e)^2 - 8*a*b*real_part(cos_i
ntegral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)*tan(e)^2 +
8*a*b*real_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(
```

1/2*e)^2*tan(e)^2 + 8*a*b*real_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^
2*tan(1/2*c*f/d)*tan(1/2*e)^2*tan(e)^2 + 2*b^2*imag_part(cos_integral(2*f*x
 + 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - 2*b^2*imag
_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e
)^2*tan(e)^2 + 4*b^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)*tan(1/2*c*f
/d)^2*tan(1/2*e)^2*tan(e)^2 + 4*a*b*imag_part(cos_integral(f*x + c*f/d))*ta
n(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 4*a*b*imag_part(cos_integral(-f*
x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 4*a^2*log(abs(d*x
+ c))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*b^2*log(abs(d*x + c))*
tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + b^2*real_part(cos_integral(2*f
*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + b^2*real_part(c
os_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2 +
 8*a*b*sin_integral((d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*
e)^2 - 4*b^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*c*
f/d)^2*tan(1/2*e)^2*tan(e) - 4*b^2*real_part(cos_integral(-2*f*x - 2*c*f/d)
)*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e) - 4*a*b*imag_part(cos_int
egral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 + 4*a*b*imag_par
t(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 + 4*a^
2*log(abs(d*x + c))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 + 2*b^2*log(abs(
d*x + c))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 - b^2*real_part(cos_integr
al(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 - b^2*real_part
(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 - 8
*a*b*sin_integral((d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 +
 16*a*b*imag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*ta
n(1/2*e)*tan(e)^2 - 16*a*b*imag_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)
^2*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 + 32*a*b*sin_integral((d*f*x + c*f)/d
)*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 - 4*a*b*imag_part(cos_int
egral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 4*a*b*imag_part(co
s_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 4*a^2*log(ab
s(d*x + c))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 2*b^2*log(abs(d*x + c))*ta
n(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - b^2*real_part(cos_integral(2*f*x + 2*c*f
/d))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - b^2*real_part(cos_integral(-2*f*x
 - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - 8*a*b*sin_integral((d*f*x
 + c*f)/d)*tan(c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 4*a*b*imag_part(cos_integra
l(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - 4*a*b*imag_part(co
s_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 4*a^2*lo
g(abs(d*x + c))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 2*b^2*log(abs(d*x
+ c))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + b^2*real_part(cos_integral(2
*f*x + 2*c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + b^2*real_part(cos
_integral(-2*f*x - 2*c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + 8*a*b
*sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 - 8*a
*b*real_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(1
/2*e) - 8*a*b*real_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*
f/d)^2*tan(1/2*e) + 8*a*b*real_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2
*tan(1/2*c*f/d)*tan(1/2*e)^2 + 8*a*b*real_part(cos_integral(-f*x - c*f/d))*

tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e)^2 - 2*b^2*imag_part(cos_integral(2*f
*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*b^2*imag_part(c
os_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 4
*b^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(1/2*e)
^2 - 2*b^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*
f/d)^2*tan(e) + 2*b^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^
2*tan(1/2*c*f/d)^2*tan(e) - 4*b^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d
)^2*tan(1/2*c*f/d)^2*tan(e) - 2*b^2*imag_part(cos_integral(2*f*x + 2*c*f/d)
)*tan(c*f/d)^2*tan(1/2*e)^2*tan(e) + 2*b^2*imag_part(cos_integral(-2*f*x -
2*c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2*tan(e) - 4*b^2*sin_integral(2*(d*f*x +
c*f)/d)*tan(c*f/d)^2*tan(1/2*e)^2*tan(e) + 2*b^2*imag_part(cos_integral(2*f
*x + 2*c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e) - 2*b^2*imag_part(cos_i
ntegral(-2*f*x - 2*c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e) + 4*b^2*sin
_integral(2*(d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e) - 8*a*b*r
eal_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(e)^2 -
8*a*b*real_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan
(e)^2 + 2*b^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*c
*f/d)^2*tan(e)^2 - 2*b^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/
d)*tan(1/2*c*f/d)^2*tan(e)^2 + 4*b^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*
f/d)*tan(1/2*c*f/d)^2*tan(e)^2 + 8*a*b*real_part(cos_integral(f*x + c*f/d))
*tan(c*f/d)^2*tan(1/2*e)*tan(e)^2 + 8*a*b*real_part(cos_integral(-f*x - c*f
/d))*tan(c*f/d)^2*tan(1/2*e)*tan(e)^2 - 8*a*b*real_part(cos_integral(f*x +
c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)*tan(e)^2 - 8*a*b*real_part(cos_integral
(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)*tan(e)^2 + 2*b^2*imag_part(cos_
integral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*e)^2*tan(e)^2 - 2*b^2*imag_pa
rt(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*e)^2*tan(e)^2 + 4*b^2
sin_integral(2(d*f*x + c*f)/d)*tan(c*f/d)*tan(1/2*e)^2*tan(e)^2 + 8*a*b*r
eal_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e)^2*tan(e)^2 +
8*a*b*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e)^2*tan
(e)^2 - 4*a*b*imag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f
/d)^2 + 4*a*b*imag_part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*
f/d)^2 + 4*a^2*log(abs(d*x + c))*tan(c*f/d)^2*tan(1/2*c*f/d)^2 + 2*b^2*log(
abs(d*x + c))*tan(c*f/d)^2*tan(1/2*c*f/d)^2 + b^2*real_part(cos_integral(2*
f*x + 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2 + b^2*real_part(cos_integral(
-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)^2 - 8*a*b*sin_integral((d*f*
x + c*f)/d)*tan(c*f/d)^2*tan(1/2*c*f/d)^2 + 16*a*b*imag_part(cos_integral(f
*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e) - 16*a*b*imag_part(cos_
integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e) + 32*a*b*sin
_integral((d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*c*f/d)*tan(1/2*e) - 4*a*b*i
mag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2 + 4*a*b*imag_
part(cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*e)^2 + 4*a^2*log(abs(
d*x + c))*tan(c*f/d)^2*tan(1/2*e)^2 + 2*b^2*log(abs(d*x + c))*tan(c*f/d)^2*
tan(1/2*e)^2 + b^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*ta
n(1/2*e)^2 + b^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan
(1/2*e)^2 - 8*a*b*sin_integral((d*f*x + c*f)/d)*tan(c*f/d)^2*tan(1/2*e)^2 +

```
 4*a*b*imag_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 -
 4*a*b*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2
+ 4*a^2*log(abs(d*x + c))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 2*b^2*log(abs(d*x
 + c))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - b^2*real_part(cos_integral(2*f*x + 2
*c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - b^2*real_part(cos_integral(-2*f*x
- 2*c*f/d))*tan(1/2*c*f/d)^2*tan(1/2*e)^2 + 8*a*b*sin_integral((d*f*x + c*f
)/d)*tan(1/2*c*f/d)^2*tan(1/2*e)^2 - 4*b^2*real_part(cos_integral(2*f*x + 2
*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(e) - 4*b^2*real_part(cos_integral(
-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2*tan(e) - 4*b^2*real_part(cos
_integral(2*f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*e)^2*tan(e) - 4*b^2*real_par
t(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*e)^2*tan(e) + 4*a*b*im
ag_part(cos_integral(f*x + c*f/d))*tan(c*f/d)^2*tan(e)^2 - 4*a*b*imag_part(
cos_integral(-f*x - c*f/d))*tan(c*f/d)^2*tan(e)^2 + 4*a^2*log(abs(d*x + c))
*tan(c*f/d)^2*tan(e)^2 + 2*b^2*log(abs(d*x + c))*tan(c*f/d)^2*tan(e)^2 - b^
2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(e)^2 - b^2*real
_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(e)^2 + 8*a*b*sin_int
egral((d*f*x + c*f)/d)*tan(c*f/d)^2*tan(e)^2 - 4*a*b*imag_part(cos_integral
(f*x + c*f/d))*tan(1/2*c*f/d)^2*tan(e)^2 + 4*a*b*imag_part(cos_integral(-f*
x - c*f/d))*tan(1/2*c*f/d)^2*tan(e)^2 + 4*a^2*log(abs(d*x + c))*tan(1/2*c*f
/d)^2*tan(e)^2 + 2*b^2*log(abs(d*x + c))*tan(1/2*c*f/d)^2*tan(e)^2 + b^2*re
al_part(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*c*f/d)^2*tan(e)^2 + b^2*real
_part(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*c*f/d)^2*tan(e)^2 - 8*a*b*sin
_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(e)^2 + 16*a*b*imag_part(cos
_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 - 16*a*b*imag_pa
rt(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 + 32*a*b*
sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)*tan(1/2*e)*tan(e)^2 - 4*a*b*im
ag_part(cos_integral(f*x + c*f/d))*tan(1/2*e)^2*tan(e)^2 + 4*a*b*imag_part(
cos_integral(-f*x - c*f/d))*tan(1/2*e)^2*tan(e)^2 + 4*a^2*log(abs(d*x + c))
*tan(1/2*e)^2*tan(e)^2 + 2*b^2*log(abs(d*x + c))*tan(1/2*e)^2*tan(e)^2 + b^
2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*e)^2*tan(e)^2 + b^2*real
_part(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*e)^2*tan(e)^2 - 8*a*b*sin_int
egral((d*f*x + c*f)/d)*tan(1/2*e)^2*tan(e)^2 - 8*a*b*real_part(cos_integral
(f*x + c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d) - 8*a*b*real_part(cos_integral(-
f*x - c*f/d))*tan(c*f/d)^2*tan(1/2*c*f/d) - 2*b^2*imag_part(cos_integral(2*
f*x + 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2 + 2*b^2*imag_part(cos_integral(
-2*f*x - 2*c*f/d))*tan(c*f/d)*tan(1/2*c*f/d)^2 - 4*b^2*sin_integral(2*(d*f*
x + c*f)/d)*tan(c*f/d)*tan(1/2*c*f/d)^2 + 8*a*b*real_part(cos_integral(f*x
+ c*f/d))*tan(c*f/d)^2*tan(1/2*e) + 8*a*b*real_part(cos_integral(-f*x - c*f
/d))*tan(c*f/d)^2*tan(1/2*e) - 8*a*b*real_part(cos_integral(f*x + c*f/d))*t
an(1/2*c*f/d)^2*tan(1/2*e) - 8*a*b*real_part(cos_integral(-f*x - c*f/d))*ta
n(1/2*c*f/d)^2*tan(1/2*e) - 2*b^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*
tan(c*f/d)*tan(1/2*e)^2 + 2*b^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*t
an(c*f/d)*tan(1/2*e)^2 - 4*b^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)*t
an(1/2*e)^2 + 8*a*b*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan
(1/2*e)^2 + 8*a*b*real_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(
```

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1/2*e)^2 - 2*b^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2*tan(
e) + 2*b^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2*tan(e) -
4*b^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)^2*tan(e) + 2*b^2*imag_part
(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*c*f/d)^2*tan(e) - 2*b^2*imag_part(c
os_integral(-2*f*x - 2*c*f/d))*tan(1/2*c*f/d)^2*tan(e) + 4*b^2*sin_integral
(2*(d*f*x + c*f)/d)*tan(1/2*c*f/d)^2*tan(e) + 2*b^2*imag_part(cos_integral(
2*f*x + 2*c*f/d))*tan(1/2*e)^2*tan(e) - 2*b^2*imag_part(cos_integral(-2*f*x
 - 2*c*f/d))*tan(1/2*e)^2*tan(e) + 4*b^2*sin_integral(2*(d*f*x + c*f)/d)*ta
n(1/2*e)^2*tan(e) + 2*b^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/
d)*tan(e)^2 - 2*b^2*imag_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)*ta
n(e)^2 + 4*b^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d)*tan(e)^2 - 8*a*b*
real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(e)^2 - 8*a*b*real_p
art(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(e)^2 + 8*a*b*real_part(c
os_integral(f*x + c*f/d))*tan(1/2*e)*tan(e)^2 + 8*a*b*real_part(cos_integra
l(-f*x - c*f/d))*tan(1/2*e)*tan(e)^2 + 4*a*b*imag_part(cos_integral(f*x + c
*f/d))*tan(c*f/d)^2 - 4*a*b*imag_part(cos_integral(-f*x - c*f/d))*tan(c*f/d
)^2 + 4*a^2*log(abs(d*x + c))*tan(c*f/d)^2 + 2*b^2*log(abs(d*x + c))*tan(c*
f/d)^2 + b^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(c*f/d)^2 + b^2*re
al_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f/d)^2 + 8*a*b*sin_integral((
d*f*x + c*f)/d)*tan(c*f/d)^2 - 4*a*b*imag_part(cos_integral(f*x + c*f/d))*t
an(1/2*c*f/d)^2 + 4*a*b*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d
)^2 + 4*a^2*log(abs(d*x + c))*tan(1/2*c*f/d)^2 + 2*b^2*log(abs(d*x + c))*ta
n(1/2*c*f/d)^2 - b^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*c*f/d
)^2 - b^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*c*f/d)^2 - 8*a*
b*sin_integral((d*f*x + c*f)/d)*tan(1/2*c*f/d)^2 + 16*a*b*imag_part(cos_int
egral(f*x + c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) - 16*a*b*imag_part(cos_integr
al(-f*x - c*f/d))*tan(1/2*c*f/d)*tan(1/2*e) + 32*a*b*sin_integral((d*f*x +
c*f)/d)*tan(1/2*c*f/d)*tan(1/2*e) - 4*a*b*imag_part(cos_integral(f*x + c*f/
d))*tan(1/2*e)^2 + 4*a*b*imag_part(cos_integral(-f*x - c*f/d))*tan(1/2*e)^2
 + 4*a^2*log(abs(d*x + c))*tan(1/2*e)^2 + 2*b^2*log(abs(d*x + c))*tan(1/2*e
)^2 - b^2*real_part(cos_integral(2*f*x + 2*c*f/d))*tan(1/2*e)^2 - b^2*real_
part(cos_integral(-2*f*x - 2*c*f/d))*tan(1/2*e)^2 - 8*a*b*sin_integral((d*f
*x + c*f)/d)*tan(1/2*e)^2 - 4*b^2*real_part(cos_integral(2*f*x + 2*c*f/d))*
tan(c*f/d)*tan(e) - 4*b^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(c*f
/d)*tan(e) + 4*a*b*imag_part(cos_integral(f*x + c*f/d))*tan(e)^2 - 4*a*b*im
ag_part(cos_integral(-f*x - c*f/d))*tan(e)^2 + 4*a^2*log(abs(d*x + c))*tan(
e)^2 + 2*b^2*log(abs(d*x + c))*tan(e)^2 + b^2*real_part(cos_integral(2*f*x
+ 2*c*f/d))*tan(e)^2 + b^2*real_part(cos_integral(-2*f*x - 2*c*f/d))*tan(e)
^2 + 8*a*b*sin_integral((d*f*x + c*f)/d)*tan(e)^2 - 2*b^2*imag_part(cos_int
egral(2*f*x + 2*c*f/d))*tan(c*f/d) + 2*b^2*imag_part(cos_integral(-2*f*x -
2*c*f/d))*tan(c*f/d) - 4*b^2*sin_integral(2*(d*f*x + c*f)/d)*tan(c*f/d) - 8
*a*b*real_part(cos_integral(f*x + c*f/d))*tan(1/2*c*f/d) - 8*a*b*real_part(
cos_integral(-f*x - c*f/d))*tan(1/2*c*f/d) + 8*a*b*real_part(cos_integral(f
*x + c*f/d))*tan(1/2*e) + 8*a*b*real_part(cos_integral(-f*x - c*f/d))*tan(1
/2*e) + 2*b^2*imag_part(cos_integral(2*f*x + 2*c*f/d))*tan(e) - 2*b^2*imag_
```

```
part(cos_integral(-2*f*x - 2*c*f/d))*tan(e) + 4*b^2*sin_integral(2*(d*f*x +
 c*f)/d)*tan(e) + 4*a*b*imag_part(cos_integral(f*x + c*f/d)) - 4*a*b*imag_p
art(cos_integral(-f*x - c*f/d)) + 4*a^2*log(abs(d*x + c)) + 2*b^2*log(abs(d
*x + c)) - b^2*real_part(cos_integral(2*f*x + 2*c*f/d)) - b^2*real_part(cos
_integral(-2*f*x - 2*c*f/d)) + 8*a*b*sin_integral((d*f*x + c*f)/d))/(d*tan(
c*f/d)^2*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + d*tan(c*f/d)^2*tan(1/2*c*
f/d)^2*tan(1/2*e)^2 + d*tan(c*f/d)^2*tan(1/2*c*f/d)^2*tan(e)^2 + d*tan(c*f/
d)^2*tan(1/2*e)^2*tan(e)^2 + d*tan(1/2*c*f/d)^2*tan(1/2*e)^2*tan(e)^2 + d*t
an(c*f/d)^2*tan(1/2*c*f/d)^2 + d*tan(c*f/d)^2*tan(1/2*e)^2 + d*tan(1/2*c*f/
d)^2*tan(1/2*e)^2 + d*tan(c*f/d)^2*tan(e)^2 + d*tan(1/2*c*f/d)^2*tan(e)^2 +
 d*tan(1/2*e)^2*tan(e)^2 + d*tan(c*f/d)^2 + d*tan(1/2*c*f/d)^2 + d*tan(1/2*
e)^2 + d*tan(e)^2 + d)
```

maple [A] time = 0.04, size = 213, normalized size = 1.37

$$\frac{a^2\ln\left(\left(fx+e\right)d+cf-de\right)}{d}+\frac{2ab\,\mathrm{Si}\left(fx+e+\frac{cf-de}{d}\right)\cos\left(\frac{cf-de}{d}\right)}{d}-\frac{2ab\,\mathrm{Ci}\left(fx+e+\frac{cf-de}{d}\right)\sin\left(\frac{cf-de}{d}\right)}{d}+\frac{b^2\ln\left(\left(f\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sin(f*x+e))^2/(d*x+c),x)
```

```
[Out] a^2*ln((f*x+e)*d+c*f-d*e)/d+2*a*b*Si(f*x+e+(c*f-d*e)/d)*cos((c*f-d*e)/d)/d-
2*a*b*Ci(f*x+e+(c*f-d*e)/d)*sin((c*f-d*e)/d)/d+1/2*b^2*ln((f*x+e)*d+c*f-d*e
)/d-1/2*b^2*Si(2*f*x+2*e+2*(c*f-d*e)/d)*sin(2*(c*f-d*e)/d)/d-1/2*b^2*Ci(2*f
*x+2*e+2*(c*f-d*e)/d)*cos(2*(c*f-d*e)/d)/d
```

maxima [C] time = 0.72, size = 334, normalized size = 2.14

$$\frac{\frac{4a^2f\log\left(c+\frac{(fx+e)d}{f}-\frac{de}{f}\right)}{d}+\frac{4\left(f\left(-iE_1\left(\frac{i(fx+e)d-ide+icf}{d}\right)+iE_1\left(-\frac{i(fx+e)d-ide+icf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f\left(E_1\left(\frac{i(fx+e)d-ide+icf}{d}\right)+E_1\left(-\frac{i(fx+e)d-ide+icf}{d}\right)\right.\right.}{d}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))^2/(d*x+c),x, algorithm="maxima")
```

```
[Out] 1/4*(4*a^2*f*log(c + (f*x + e)*d/f - d*e/f)/d + 4*(f*(-I*exp_integral_e(1,
(I*(f*x + e)*d - I*d*e + I*c*f)/d) + I*exp_integral_e(1, -(I*(f*x + e)*d -
I*d*e + I*c*f)/d))*cos(-(d*e - c*f)/d) + f*(exp_integral_e(1, (I*(f*x + e)*
d - I*d*e + I*c*f)/d) + exp_integral_e(1, -(I*(f*x + e)*d - I*d*e + I*c*f)/
d))*sin(-(d*e - c*f)/d))*a*b/d + (f*(exp_integral_e(1, (2*I*(f*x + e)*d - 2
*I*d*e + 2*I*c*f)/d) + exp_integral_e(1, -(2*I*(f*x + e)*d - 2*I*d*e + 2*I*
c*f)/d))*cos(-2*(d*e - c*f)/d) + f*(I*exp_integral_e(1, (2*I*(f*x + e)*d -
2*I*d*e + 2*I*c*f)/d) - I*exp_integral_e(1, -(2*I*(f*x + e)*d - 2*I*d*e + 2
```

```
*I*c*f)/d))*sin(-2*(d*e - c*f)/d) + 2*f*log((f*x + e)*d - d*e + c*f))*b^2/d
)/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a + b \sin\left(e + f x\right)\right)^2}{c + d x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))^2/(c + d*x),x)
```

```
[Out] int((a + b*sin(e + f*x))^2/(c + d*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b \sin\left(e + f x\right)\right)^2}{c + dx} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))**2/(d*x+c),x)
```

```
[Out] Integral((a + b*sin(e + f*x))**2/(c + d*x), x)
```

3.161 $\int \frac{(a+b\sin(e+fx))^2}{(c+dx)^2}\,dx$

Optimal. Leaf size=183

$$-\frac{a^2}{d(c+dx)}+\frac{2abf\text{Ci}\left(xf+\frac{cf}{d}\right)\cos\left(e-\frac{cf}{d}\right)}{d^2}-\frac{2abf\sin\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{2ab\sin(e+fx)}{d(c+dx)}+\frac{b^2f\text{Ci}\left(2xf+\frac{2cf}{d}\right.}{d^2}$$

```
[Out] -a^2/d/(d*x+c)+2*a*b*f*Ci(c*f/d+f*x)*cos(-e+c*f/d)/d^2+b^2*f*cos(-2*e+2*c*f
/d)*Si(2*c*f/d+2*f*x)/d^2-b^2*f*Ci(2*c*f/d+2*f*x)*sin(-2*e+2*c*f/d)/d^2+2*a
*b*f*Si(c*f/d+f*x)*sin(-e+c*f/d)/d^2-2*a*b*sin(f*x+e)/d/(d*x+c)-b^2*sin(f*x
+e)^2/d/(d*x+c)
```

Rubi [A] time = 0.33, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {3317, 3297, 3303, 3299, 3302, 3313, 12}

$$-\frac{a^2}{d(c+dx)}+\frac{2abf\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\cos\left(e-\frac{cf}{d}\right)}{d^2}-\frac{2abf\sin\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d^2}-\frac{2ab\sin(e+fx)}{d(c+dx)}+\frac{b^2f\text{Co}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sin[e + f*x])^2/(c + d*x)^2,x]
```

```
[Out] -(a^2/(d*(c + d*x))) + (2*a*b*f*Cos[e - (c*f)/d]*CosIntegral[(c*f)/d + f*x]
)/d^2 + (b^2*f*CosIntegral[(2*c*f)/d + 2*f*x]*Sin[2*e - (2*c*f)/d])/d^2 - (
2*a*b*Sin[e + f*x])/(d*(c + d*x)) - (b^2*Sin[e + f*x]^2)/(d*(c + d*x)) - (2
*a*b*f*Sin[e - (c*f)/d]*SinIntegral[(c*f)/d + f*x])/d^2 + (b^2*f*Cos[2*e -
(2*c*f)/d]*SinIntegral[(2*c*f)/d + 2*f*x])/d^2
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3313

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> Si
mp[((c + d*x)^(m + 1)*Sin[e + f*x]^n)/(d*(m + 1)), x] - Dist[(f*n)/(d*(m +
1)), Int[ExpandTrigReduce[(c + d*x)^(m + 1), Cos[e + f*x]*Sin[e + f*x]^(n -
 1), x], x], x] /; FreeQ[{c, d, e, f, m}, x] && IGtQ[n, 1] && GeQ[m, -2] &&
 LtQ[m, -1]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int \frac{(a+b\sin(e+fx))^2}{(c+dx)^2}\,dx = \int \left(\frac{a^2}{(c+dx)^2}+\frac{2ab\sin(e+fx)}{(c+dx)^2}+\frac{b^2\sin^2(e+fx)}{(c+dx)^2}\right)dx$$

$$= -\frac{a^2}{d(c+dx)}+(2ab)\int \frac{\sin(e+fx)}{(c+dx)^2}\,dx+b^2\int \frac{\sin^2(e+fx)}{(c+dx)^2}\,dx$$

$$= -\frac{a^2}{d(c+dx)}-\frac{2ab\sin(e+fx)}{d(c+dx)}-\frac{b^2\sin^2(e+fx)}{d(c+dx)}+\frac{(2abf)\int \frac{\cos(e+fx)}{c+dx}\,dx}{d}+\frac{\left(2b^2f\right)\int$$

$$= -\frac{a^2}{d(c+dx)}-\frac{2ab\sin(e+fx)}{d(c+dx)}-\frac{b^2\sin^2(e+fx)}{d(c+dx)}+\frac{\left(b^2f\right)\int \frac{\sin(2e+2fx)}{c+dx}\,dx}{d}+\frac{\left(2abf\,\mathrm{c}\right.}{}$$

$$= -\frac{a^2}{d(c+dx)}+\frac{2abf\cos\left(e-\frac{cf}{d}\right)\mathrm{Ci}\left(\frac{cf}{d}+fx\right)}{d^2}-\frac{2ab\sin(e+fx)}{d(c+dx)}-\frac{b^2\sin^2(e+fx)}{d(c+dx)}-$$

$$= -\frac{a^2}{d(c+dx)}+\frac{2abf\cos\left(e-\frac{cf}{d}\right)\mathrm{Ci}\left(\frac{cf}{d}+fx\right)}{d^2}+\frac{b^2f\mathrm{Ci}\left(\frac{2cf}{d}+2fx\right)\sin\left(2e-\frac{2cf}{d}\right)}{d^2}-$$

Mathematica [A] time = 0.65, size = 232, normalized size = 1.27

$$\frac{-2a^2d+4abf(c+dx)\mathrm{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\cos\left(e-\frac{cf}{d}\right)-4abcf\sin\left(e-\frac{cf}{d}\right)\mathrm{Si}\left(f\left(\frac{c}{d}+x\right)\right)-4abdfx\sin\left(e-\frac{cf}{d}\right)\mathrm{Si}\left(f\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sin[e + f*x])^2/(c + d*x)^2,x]
```

```
[Out] (-2*a^2*d - b^2*d + b^2*d*Cos[2*(e + f*x)] + 4*a*b*f*(c + d*x)*Cos[e - (c*f
)/d]*CosIntegral[f*(c/d + x)] + 2*b^2*f*(c + d*x)*CosIntegral[(2*f*(c + d*x
))/d]*Sin[2*e - (2*c*f)/d] - 4*a*b*d*Sin[e + f*x] - 4*a*b*c*f*Sin[e - (c*f)
/d]*SinIntegral[f*(c/d + x)] - 4*a*b*d*f*x*Sin[e - (c*f)/d]*SinIntegral[f*(
c/d + x)] + 2*b^2*c*f*Cos[2*e - (2*c*f)/d]*SinIntegral[(2*f*(c + d*x))/d] +
 2*b^2*d*f*x*Cos[2*e - (2*c*f)/d]*SinIntegral[(2*f*(c + d*x))/d])/(2*d^2*(c
 + d*x))
```

fricas [A] time = 0.71, size = 281, normalized size = 1.54

$$\frac{2\,b^2d\cos\left(fx+e\right)^2-4\,abd\sin\left(fx+e\right)+2\left(b^2dfx+b^2cf\right)\cos\left(-\frac{2\left(de-cf\right)}{d}\right)\mathrm{Si}\left(\frac{2\left(dfx+cf\right)}{d}\right)+4\left(abdfx+abcf\right)\mathrm{si}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))^2/(d*x+c)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^2*d*cos(f*x + e)^2 - 4*a*b*d*sin(f*x + e) + 2*(b^2*d*f*x + b^2*c*f
)*cos(-2*(d*e - c*f)/d)*sin_integral(2*(d*f*x + c*f)/d) + 4*(a*b*d*f*x + a*
b*c*f)*sin(-(d*e - c*f)/d)*sin_integral((d*f*x + c*f)/d) - 2*(a^2 + b^2)*d
+ 2*((a*b*d*f*x + a*b*c*f)*cos_integral((d*f*x + c*f)/d) + (a*b*d*f*x + a*b
*c*f)*cos_integral(-(d*f*x + c*f)/d))*cos(-(d*e - c*f)/d) - ((b^2*d*f*x + b
^2*c*f)*cos_integral(2*(d*f*x + c*f)/d) + (b^2*d*f*x + b^2*c*f)*cos_integra
l(-2*(d*f*x + c*f)/d))*sin(-2*(d*e - c*f)/d))/(d^3*x + c*d^2)
```

giac [B] time = 1.13, size = 1135, normalized size = 6.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))^2/(d*x+c)^2,x, algorithm="giac")
```

```
[Out] 1/2*(4*(d*x + c)*a*b*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*cos((c*f - d*e
)/d)*cos_integral(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d
*e)/d) - 4*a*b*c*f^3*cos((c*f - d*e)/d)*cos_integral(-((d*x + c)*(c*f/(d*x
+ c) - f - d*e/(d*x + c)) - c*f + d*e)/d) + 4*a*b*d*f^2*cos((c*f - d*e)/d)*
cos_integral(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d
)*e - 2*(d*x + c)*b^2*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*cos_integral(
-2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*sin(2*(c*
f - d*e)/d) + 2*b^2*c*f^3*cos_integral(-2*((d*x + c)*(c*f/(d*x + c) - f - d
*e/(d*x + c)) - c*f + d*e)/d)*sin(2*(c*f - d*e)/d) - 2*b^2*d*f^2*cos_integr
al(-2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d)*e*sin(
2*(c*f - d*e)/d) + 4*(d*x + c)*a*b*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2*
sin((c*f - d*e)/d)*sin_integral(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x +
 c)) - c*f + d*e)/d) - 4*a*b*c*f^3*sin((c*f - d*e)/d)*sin_integral(-((d*x +
 c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d) + 4*a*b*d*f^2*e*sin
((c*f - d*e)/d)*sin_integral(-((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)
) - c*f + d*e)/d) + 2*(d*x + c)*b^2*(c*f/(d*x + c) - f - d*e/(d*x + c))*f^2
*cos(2*(c*f - d*e)/d)*sin_integral(-2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(
d*x + c)) - c*f + d*e)/d) - 2*b^2*c*f^3*cos(2*(c*f - d*e)/d)*sin_integral(-
2*((d*x + c)*(c*f/(d*x + c) - f - d*e/(d*x + c)) - c*f + d*e)/d) + 2*b^2*d*
f^2*cos(2*(c*f - d*e)/d)*e*sin_integral(-2*((d*x + c)*(c*f/(d*x + c) - f -
d*e/(d*x + c)) - c*f + d*e)/d) - b^2*d*f^2*cos(2*(d*x + c)*(c*f/(d*x + c) -
 f - d*e/(d*x + c))/d) - 4*a*b*d*f^2*sin((d*x + c)*(c*f/(d*x + c) - f - d*e
/(d*x + c))/d) + 2*a^2*d*f^2 + b^2*d*f^2)*d^2/(((d*x + c)*d^4*(c*f/(d*x + c
) - f - d*e/(d*x + c)) - c*d^4*f + d^5*e)*f)
```

maple [A] time = 0.05, size = 301, normalized size = 1.64

$$\frac{-\frac{a^{2} f^{2}}{\left(\left(f x+e\right) d+c f-d e\right) d}+2 f^{2} a b \left(-\frac{\sin\left(f x+e\right)}{\left(\left(f x+e\right) d+c f-d e\right) d}+\frac{\frac{\mathrm{Si}\left(f x+e+\frac{c f-d e}{d}\right) \sin\left(\frac{c f-d e}{d}\right)}{d}+\frac{\mathrm{Ci}\left(f x+e+\frac{c f-d e}{d}\right) \cos\left(\frac{c f-d e}{d}\right)}{d}}{d}\right)-\frac{f^{2} b^{2}}{2\left(\left(f x+e\right) d+c f-d e\right) d}-\frac{f^{2} b \cdots}{\cdots}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sin(f*x+e))^2/(d*x+c)^2,x)
```

```
[Out] 1/f*(-a^2*f^2/((f*x+e)*d+c*f-d*e)/d+2*f^2*a*b*(-sin(f*x+e)/((f*x+e)*d+c*f-d
*e)/d+(Si(f*x+e+(c*f-d*e)/d)*sin((c*f-d*e)/d)/d+Ci(f*x+e+(c*f-d*e)/d)*cos((
c*f-d*e)/d)/d)/d)-1/2*f^2*b^2/((f*x+e)*d+c*f-d*e)/d-1/4*f^2*b^2*(-2*cos(2*f
*x+2*e)/((f*x+e)*d+c*f-d*e)/d-2*(2*Si(2*f*x+2*e+2*(c*f-d*e)/d)*cos(2*(c*f-d
*e)/d)/d-2*Ci(2*f*x+2*e+2*(c*f-d*e)/d)*sin(2*(c*f-d*e)/d)/d)/d))
```

maxima [C] time = 0.59, size = 369, normalized size = 2.02

$$-\frac{\frac{64\, a^{2} f^{2}}{\left(f x+e\right) d^{2}-d^{2} e+c d f}-\frac{64 \left(f^{2}\left(-i\, E_{2}\left(\frac{i\left(f x+e\right) d-i\, d e+i\, c f}{d}\right)+i\, E_{2}\left(-\frac{i\left(f x+e\right) d-i\, d e+i\, c f}{d}\right)\right) \cos\left(-\frac{d e-c f}{d}\right)+f^{2}\left(E_{2}\left(\frac{i\left(f x+e\right) d-i\, d e+i\, c f}{d}\right)+E_{2}\left(-\frac{i\left(f x+e\right) d-i\, d e+i\, c f}{d}\right)\right) \cdots\right)}{\left(f x+e\right) d^{2}-d^{2} e+c d f} \cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))^2/(d*x+c)^2,x, algorithm="maxima")
```

```
[Out] -1/64*(64*a^2*f^2/((f*x + e)*d^2 - d^2*e + c*d*f) - 64*(f^2*(-I*exp_integra
l_e(2, (I*(f*x + e)*d - I*d*e + I*c*f)/d) + I*exp_integral_e(2, -(I*(f*x +
e)*d - I*d*e + I*c*f)/d))*cos(-(d*e - c*f)/d) + f^2*(exp_integral_e(2, (I*(
f*x + e)*d - I*d*e + I*c*f)/d) + exp_integral_e(2, -(I*(f*x + e)*d - I*d*e
+ I*c*f)/d))*sin(-(d*e - c*f)/d))*a*b/((f*x + e)*d^2 - d^2*e + c*d*f) - (16
*f^2*(exp_integral_e(2, (2*I*(f*x + e)*d - 2*I*d*e + 2*I*c*f)/d) + exp_inte
gral_e(2, -(2*I*(f*x + e)*d - 2*I*d*e + 2*I*c*f)/d))*cos(-2*(d*e - c*f)/d)
+ f^2*(16*I*exp_integral_e(2, (2*I*(f*x + e)*d - 2*I*d*e + 2*I*c*f)/d) - 16
*I*exp_integral_e(2, -(2*I*(f*x + e)*d - 2*I*d*e + 2*I*c*f)/d))*sin(-2*(d*e
 - c*f)/d) - 32*f^2)*b^2/((f*x + e)*d^2 - d^2*e + c*d*f))/f
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(a+b\,\sin\left(e+f\,x\right)\right)}^2}{{\left(c+d\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))^2/(c + d*x)^2,x)
```

```
[Out] int((a + b*sin(e + f*x))^2/(c + d*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\sin\left(e + fx\right)\right)^2}{(c + dx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))**2/(d*x+c)**2,x)
```

```
[Out] Integral((a + b*sin(e + f*x))**2/(c + d*x)**2, x)
```

3.162 $\int \frac{(a+b\sin(e+fx))^2}{(c+dx)^3}\,dx$

Optimal. Leaf size=245

$$-\frac{a^2}{2d(c+dx)^2}-\frac{abf^2\text{Ci}\left(xf+\frac{cf}{d}\right)\sin\left(e-\frac{cf}{d}\right)}{d^3}-\frac{abf^2\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d^3}-\frac{abf\cos(e+fx)}{d^2(c+dx)}-\frac{ab\sin(e+fx)}{d(c+dx)^2}-$$

```
[Out] -1/2*a^2/d/(d*x+c)^2+b^2*f^2*Ci(2*c*f/d+2*f*x)*cos(-2*e+2*c*f/d)/d^3-a*b*f*
cos(f*x+e)/d^2/(d*x+c)-a*b*f^2*cos(-e+c*f/d)*Si(c*f/d+f*x)/d^3+b^2*f^2*Si(2
*c*f/d+2*f*x)*sin(-2*e+2*c*f/d)/d^3+a*b*f^2*Ci(c*f/d+f*x)*sin(-e+c*f/d)/d^3
-a*b*sin(f*x+e)/d/(d*x+c)^2-b^2*f*cos(f*x+e)*sin(f*x+e)/d^2/(d*x+c)-1/2*b^2
*sin(f*x+e)^2/d/(d*x+c)^2
```

Rubi [A] time = 0.42, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {3317, 3297, 3303, 3299, 3302, 3314, 31, 3312}

$$-\frac{a^2}{2d(c+dx)^2}-\frac{abf^2\text{CosIntegral}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d^3}-\frac{abf^2\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(xf+\frac{cf}{d}\right)}{d^3}-\frac{abf\cos(e+fx)}{d^2(c+dx)}-\frac{ab\sin}{d(c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*Sin[e + f*x])^2/(c + d*x)^3,x]
```

```
[Out] -a^2/(2*d*(c + d*x)^2) - (a*b*f*Cos[e + f*x])/(d^2*(c + d*x)) + (b^2*f^2*Co
s[2*e - (2*c*f)/d]*CosIntegral[(2*c*f)/d + 2*f*x])/d^3 - (a*b*f^2*CosIntegr
al[(c*f)/d + f*x]*Sin[e - (c*f)/d])/d^3 - (a*b*Sin[e + f*x])/(d*(c + d*x)^2
) - (b^2*f*Cos[e + f*x]*Sin[e + f*x])/(d^2*(c + d*x)) - (b^2*Sin[e + f*x]^2
)/(2*d*(c + d*x)^2) - (a*b*f^2*Cos[e - (c*f)/d]*SinIntegral[(c*f)/d + f*x])
/d^3 - (b^2*f^2*Sin[2*e - (2*c*f)/d]*SinIntegral[(2*c*f)/d + 2*f*x])/d^3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3314

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[((c + d*x)^(m + 1)*(b*Sin[e + f*x])^n)/(d*(m + 1)), x] + (Dist[(
b^2*f^2*n*(n - 1))/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)^(m + 2)*(b*Sin[e +
f*x])^(n - 2), x], x] - Dist[(f^2*n^2)/(d^2*(m + 1)*(m + 2)), Int[(c + d*x)
^(m + 2)*(b*Sin[e + f*x])^n, x], x] - Simp[(b*f*n*(c + d*x)^(m + 2)*Cos[e +
 f*x]*(b*Sin[e + f*x])^(n - 1))/(d^2*(m + 1)*(m + 2)), x]) /; FreeQ[{b, c,
d, e, f}, x] && GtQ[n, 1] && LtQ[m, -2]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int \frac{(a+b\sin(e+fx))^2}{(c+dx)^3}\,dx = \int\left(\frac{a^2}{(c+dx)^3}+\frac{2ab\sin(e+fx)}{(c+dx)^3}+\frac{b^2\sin^2(e+fx)}{(c+dx)^3}\right)dx$$

$$= -\frac{a^2}{2d(c+dx)^2}+(2ab)\int\frac{\sin(e+fx)}{(c+dx)^3}\,dx+b^2\int\frac{\sin^2(e+fx)}{(c+dx)^3}\,dx$$

$$= -\frac{a^2}{2d(c+dx)^2}-\frac{ab\sin(e+fx)}{d(c+dx)^2}-\frac{b^2f\cos(e+fx)\sin(e+fx)}{d^2(c+dx)}-\frac{b^2\sin^2(e+fx)}{2d(c+dx)^2}+$$

$$= -\frac{a^2}{2d(c+dx)^2}-\frac{abf\cos(e+fx)}{d^2(c+dx)}+\frac{b^2f^2\log(c+dx)}{d^3}-\frac{ab\sin(e+fx)}{d(c+dx)^2}-\frac{b^2f\cos(e}{d^2}$$

$$= -\frac{a^2}{2d(c+dx)^2}-\frac{abf\cos(e+fx)}{d^2(c+dx)}-\frac{ab\sin(e+fx)}{d(c+dx)^2}-\frac{b^2f\cos(e+fx)\sin(e+fx)}{d^2(c+dx)}-$$

$$= -\frac{a^2}{2d(c+dx)^2}-\frac{abf\cos(e+fx)}{d^2(c+dx)}-\frac{abf^2\text{Ci}\left(\frac{cf}{d}+fx\right)\sin\left(e-\frac{cf}{d}\right)}{d^3}-\frac{ab\sin(e+fx)}{d(c+dx)^2}$$

$$= -\frac{a^2}{2d(c+dx)^2}-\frac{abf\cos(e+fx)}{d^2(c+dx)}+\frac{b^2f^2\cos\left(2e-\frac{2cf}{d}\right)\text{Ci}\left(\frac{2cf}{d}+2fx\right)}{d^3}-\frac{abf^2\text{Ci}\left(\right.}{}$$

Mathematica [A] time = 1.30, size = 395, normalized size = 1.61

$$-\frac{2a^2d^2+4abc^2f^2\cos\left(e-\frac{cf}{d}\right)\text{Si}\left(f\left(\frac{c}{d}+x\right)\right)+4abf^2(c+dx)^2\text{Ci}\left(f\left(\frac{c}{d}+x\right)\right)\sin\left(e-\frac{cf}{d}\right)+4abd^2f^2x^2\cos\left(e-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*Sin[e + f*x])^2/(c + d*x)^3,x]
```

```
[Out] -1/4*(2*a^2*d^2 + b^2*d^2 + 4*a*b*c*d*f*Cos[e + f*x] + 4*a*b*d^2*f*x*Cos[e
+ f*x] - b^2*d^2*Cos[2*(e + f*x)] - 4*b^2*f^2*(c + d*x)^2*Cos[2*e - (2*c*f)
/d]*CosIntegral[(2*f*(c + d*x))/d] + 4*a*b*f^2*(c + d*x)^2*CosIntegral[f*(c
/d + x)]*Sin[e - (c*f)/d] + 4*a*b*d^2*Sin[e + f*x] + 2*b^2*c*d*f*Sin[2*(e +
 f*x)] + 2*b^2*d^2*f*x*Sin[2*(e + f*x)] + 4*a*b*c^2*f^2*Cos[e - (c*f)/d]*Si
nIntegral[f*(c/d + x)] + 8*a*b*c*d*f^2*x*Cos[e - (c*f)/d]*SinIntegral[f*(c/
d + x)] + 4*a*b*d^2*f^2*x^2*Cos[e - (c*f)/d]*SinIntegral[f*(c/d + x)] + 4*b
^2*c^2*f^2*Sin[2*e - (2*c*f)/d]*SinIntegral[(2*f*(c + d*x))/d] + 8*b^2*c*d*
f^2*x*Sin[2*e - (2*c*f)/d]*SinIntegral[(2*f*(c + d*x))/d] + 4*b^2*d^2*f^2*x
^2*Sin[2*e - (2*c*f)/d]*SinIntegral[(2*f*(c + d*x))/d])/(d^3*(c + d*x)^2)
```

fricas [A] time = 0.84, size = 467, normalized size = 1.91

$$\frac{b^2d^2\cos\left(fx+e\right)^2-\left(a^2+b^2\right)d^2+2\left(b^2d^2f^2x^2+2\,b^2cdf^2x+b^2c^2f^2\right)\sin\left(-\frac{2\left(de-cf\right)}{d}\right)\mathrm{Si}\left(\frac{2\left(dfx+cf\right)}{d}\right)-2\left(abd^2f^2x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))^2/(d*x+c)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*d^2*cos(f*x + e)^2 - (a^2 + b^2)*d^2 + 2*(b^2*d^2*f^2*x^2 + 2*b^2*
c*d*f^2*x + b^2*c^2*f^2)*sin(-2*(d*e - c*f)/d)*sin_integral(2*(d*f*x + c*f)
/d) - 2*(a*b*d^2*f^2*x^2 + 2*a*b*c*d*f^2*x + a*b*c^2*f^2)*cos(-(d*e - c*f)/
d)*sin_integral((d*f*x + c*f)/d) - 2*(a*b*d^2*f*x + a*b*c*d*f)*cos(f*x + e)
 + ((b^2*d^2*f^2*x^2 + 2*b^2*c*d*f^2*x + b^2*c^2*f^2)*cos_integral(2*(d*f*x
 + c*f)/d) + (b^2*d^2*f^2*x^2 + 2*b^2*c*d*f^2*x + b^2*c^2*f^2)*cos_integral
(-2*(d*f*x + c*f)/d))*cos(-2*(d*e - c*f)/d) - 2*(a*b*d^2 + (b^2*d^2*f*x + b
^2*c*d*f)*cos(f*x + e))*sin(f*x + e) + ((a*b*d^2*f^2*x^2 + 2*a*b*c*d*f^2*x
+ a*b*c^2*f^2)*cos_integral((d*f*x + c*f)/d) + (a*b*d^2*f^2*x^2 + 2*a*b*c*d
*f^2*x + a*b*c^2*f^2)*cos_integral(-(d*f*x + c*f)/d))*sin(-(d*e - c*f)/d))/
(d^5*x^2 + 2*c*d^4*x + c^2*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))^2/(d*x+c)^3,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.04, size = 374, normalized size = 1.53

$$\frac{-\frac{a^2f^3}{2\left(\left(fx+e\right)d+cf-de\right)^2d}+2f^3ab\left(-\frac{\sin\left(fx+e\right)}{2\left(\left(fx+e\right)d+cf-de\right)^2d}+\frac{-\frac{\cos\left(fx+e\right)}{\left(\left(fx+e\right)d+cf-de\right)d}-\frac{\frac{\mathrm{Si}\left(fx+e+\frac{cf-de}{d}\right)\cos\left(\frac{cf-de}{d}\right)}{d}-\frac{\mathrm{Ci}\left(fx+e+\frac{cf-de}{d}\right)\sin\left(\frac{cf-de}{d}\right)}{d}}{d}}{2d}\right)-\frac{}{4\left(\left(fx\right.\right.}}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*sin(f*x+e))^2/(d*x+c)^3,x)
```

```
[Out] 1/f*(-1/2*a^2*f^3/((f*x+e)*d+c*f-d*e)^2/d+2*f^3*a*b*(-1/2*sin(f*x+e)/((f*x+
e)*d+c*f-d*e)^2/d+1/2*(-cos(f*x+e)/((f*x+e)*d+c*f-d*e)/d-(Si(f*x+e+(c*f-d*e
)/d)*cos((c*f-d*e)/d)/d-Ci(f*x+e+(c*f-d*e)/d)*sin((c*f-d*e)/d)/d)/d)/d)-1/4
*f^3*b^2/((f*x+e)*d+c*f-d*e)^2/d-1/4*f^3*b^2*(-cos(2*f*x+2*e)/((f*x+e)*d+c*
f-d*e)^2/d-(-2*sin(2*f*x+2*e)/((f*x+e)*d+c*f-d*e)/d+2*(2*Si(2*f*x+2*e+2*(c*
f-d*e)/d)*sin(2*(c*f-d*e)/d)/d+2*Ci(2*f*x+2*e+2*(c*f-d*e)/d)*cos(2*(c*f-d*e
)/d)/d)/d)/d))
```

maxima [C]   time = 0.72, size = 474, normalized size = 1.93

$$-\frac{\frac{32\,a^2 f^3}{(fx+e)^2 d^3+d^3e^2-2\,cd^2ef+c^2df^2-2\left(d^3e-cd^2f\right)(fx+e)}-\frac{64\left(f^3\left(-i\,E_3\left(\frac{i(fx+e)d-i\,de+i\,cf}{d}\right)+i\,E_3\left(-\frac{i(fx+e)d-i\,de+i\,cf}{d}\right)\right)\cos\left(-\frac{de-cf}{d}\right)+f^3\left(E_3\left(\frac{i(fx+e)d \cdots}{\cdots}\right)\cdots\right.\right.}{(fx+e)^2 d^3+d^3e^2-2\,cd^2ef+c^2df^2-2\left(d^3e-cd^2f\cdots\right.}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))^2/(d*x+c)^3,x, algorithm="maxima")
```

```
[Out] -1/64*(32*a^2*f^3/((f*x + e)^2*d^3 + d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*
(d^3*e - c*d^2*f)*(f*x + e)) - 64*(f^3*(-I*exp_integral_e(3, (I*(f*x + e)*d
 - I*d*e + I*c*f)/d) + I*exp_integral_e(3, -(I*(f*x + e)*d - I*d*e + I*c*f)
/d))*cos(-(d*e - c*f)/d) + f^3*(exp_integral_e(3, (I*(f*x + e)*d - I*d*e +
I*c*f)/d) + exp_integral_e(3, -(I*(f*x + e)*d - I*d*e + I*c*f)/d))*sin(-(d*
e - c*f)/d))*a*b/((f*x + e)^2*d^3 + d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*(
d^3*e - c*d^2*f)*(f*x + e)) - (16*f^3*(exp_integral_e(3, (2*I*(f*x + e)*d -
 2*I*d*e + 2*I*c*f)/d) + exp_integral_e(3, -(2*I*(f*x + e)*d - 2*I*d*e + 2*
I*c*f)/d))*cos(-2*(d*e - c*f)/d) + f^3*(16*I*exp_integral_e(3, (2*I*(f*x +
e)*d - 2*I*d*e + 2*I*c*f)/d) - 16*I*exp_integral_e(3, -(2*I*(f*x + e)*d - 2
*I*d*e + 2*I*c*f)/d))*sin(-2*(d*e - c*f)/d) - 16*f^3)*b^2/((f*x + e)^2*d^3
+ d^3*e^2 - 2*c*d^2*e*f + c^2*d*f^2 - 2*(d^3*e - c*d^2*f)*(f*x + e)))/f
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,\sin\left(e+f\,x\right)\right)^2}{\left(c+d\,x\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))^2/(c + d*x)^3,x)
```

```
[Out] int((a + b*sin(e + f*x))^2/(c + d*x)^3, x)
```

<u>**sympy**</u> **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\sin\left(e+fx\right)\right)^{2}}{\left(c+dx\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*sin(f*x+e))**2/(d*x+c)**3,x)
```

```
[Out] Integral((a + b*sin(e + f*x))**2/(c + d*x)**3, x)
```

3.163 $\int \frac{(c+dx)^3}{a+b\sin(e+fx)}\,dx$

Optimal. Leaf size=495

$$-\frac{6id^2(c+dx)\text{Li}_3\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^3\sqrt{a^2-b^2}}+\frac{6id^2(c+dx)\text{Li}_3\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{f^3\sqrt{a^2-b^2}}-\frac{3d(c+dx)^2\text{Li}_2\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^2\sqrt{a^2-b^2}}+\frac{3d(c+dx)^2\text{Li}_2\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{f^2\sqrt{a^2-b^2}}$$

```
[Out] -I*(d*x+c)^3*ln(1-I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/f/(a^2-b^2)^(1/2)
+I*(d*x+c)^3*ln(1-I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/f/(a^2-b^2)^(1/2)
-3*d*(d*x+c)^2*polylog(2,I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/f^2/(a^2-b
^2)^(1/2)+3*d*(d*x+c)^2*polylog(2,I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/f
^2/(a^2-b^2)^(1/2)-6*I*d^2*(d*x+c)*polylog(3,I*b*exp(I*(f*x+e))/(a-(a^2-b^2
)^(1/2)))/f^3/(a^2-b^2)^(1/2)+6*I*d^2*(d*x+c)*polylog(3,I*b*exp(I*(f*x+e))/
(a+(a^2-b^2)^(1/2)))/f^3/(a^2-b^2)^(1/2)+6*d^3*polylog(4,I*b*exp(I*(f*x+e))
/(a-(a^2-b^2)^(1/2)))/f^4/(a^2-b^2)^(1/2)-6*d^3*polylog(4,I*b*exp(I*(f*x+e)
)/(a+(a^2-b^2)^(1/2)))/f^4/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.97, antiderivative size = 495, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {3323, 2264, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6id^2(c+dx)\text{PolyLog}\left(3,\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^3\sqrt{a^2-b^2}}+\frac{6id^2(c+dx)\text{PolyLog}\left(3,\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)}{f^3\sqrt{a^2-b^2}}-\frac{3d(c+dx)^2\text{PolyLog}\left(2,\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^2\sqrt{a^2-b^2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3/(a + b*Sin[e + f*x]),x]
```

```
[Out] ((-I)*(c + d*x)^3*Log[1 - (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/(Sq
rt[a^2 - b^2]*f) + (I*(c + d*x)^3*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a
^2 - b^2])])/(Sqrt[a^2 - b^2]*f) - (3*d*(c + d*x)^2*PolyLog[2, (I*b*E^(I*(e
 + f*x)))/(a - Sqrt[a^2 - b^2])])/(Sqrt[a^2 - b^2]*f^2) + (3*d*(c + d*x)^2*
PolyLog[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])])/(Sqrt[a^2 - b^2]*f
^2) - ((6*I)*d^2*(c + d*x)*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 -
 b^2])])/(Sqrt[a^2 - b^2]*f^3) + ((6*I)*d^2*(c + d*x)*PolyLog[3, (I*b*E^(I*
(e + f*x)))/(a + Sqrt[a^2 - b^2])])/(Sqrt[a^2 - b^2]*f^3) + (6*d^3*PolyLog[
4, (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/(Sqrt[a^2 - b^2]*f^4) - (6
*d^3*PolyLog[4, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])])/(Sqrt[a^2 - b
^2]*f^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
```

```
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(c+dx)^3}{a+b\sin(e+fx)}\,dx = 2\int \frac{e^{i(e+fx)}(c+dx)^3}{ib+2ae^{i(e+fx)}-ibe^{2i(e+fx)}}\,dx$$

$$= -\frac{(2ib)\int \frac{e^{i(e+fx)}(c+dx)^3}{2a-2\sqrt{a^2-b^2}-2ibe^{i(e+fx)}}\,dx}{\sqrt{a^2-b^2}} + \frac{(2ib)\int \frac{e^{i(e+fx)}(c+dx)^3}{2a+2\sqrt{a^2-b^2}-2ibe^{i(e+fx)}}\,dx}{\sqrt{a^2-b^2}}$$

$$= -\frac{i(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{(3id)\int(c+dx)^2\log}{\sqrt{a^2}}$$

$$= -\frac{i(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} - \frac{3d(c+dx)^2\mathrm{Li}_2\left(\frac{ibe^{i}}{a-\sqrt{}}\right.}{\sqrt{a^2-b^2}\,f^2}$$

$$= -\frac{i(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} - \frac{3d(c+dx)^2\mathrm{Li}_2\left(\frac{ibe^{i}}{a-\sqrt{}}\right.}{\sqrt{a^2-b^2}\,f^2}$$

$$= -\frac{i(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} - \frac{3d(c+dx)^2\mathrm{Li}_2\left(\frac{ibe^{i}}{a-\sqrt{}}\right.}{\sqrt{a^2-b^2}\,f^2}$$

$$= -\frac{i(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} - \frac{3d(c+dx)^2\mathrm{Li}_2\left(\frac{ibe^{i}}{a-\sqrt{}}\right.}{\sqrt{a^2-b^2}\,f^2}$$

Mathematica [A] time = 0.26, size = 401, normalized size = 0.81

$$-\frac{i\left(\frac{3id\left(f^2(c+dx)^2\mathrm{Li}_2\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)+2idf(c+dx)\mathrm{Li}_3\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)-2d^2\mathrm{Li}_4\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)\right)}{f^3} + \frac{3d\left(2d\left(f(c+dx)\mathrm{Li}_3\left(-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)+id\mathrm{Li}_4\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)\right)-if^2(\right.}{f^3}}{f\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3/(a + b*Sin[e + f*x]),x]
```

```
[Out] ((-I)*((c + d*x)^3*Log[1 + (I*b*E^(I*(e + f*x)))/(-a + Sqrt[a^2 - b^2])] -
(c + d*x)^3*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])] + (3*d*((-
I)*f^2*(c + d*x)^2*PolyLog[2, ((-I)*b*E^(I*(e + f*x)))/(-a + Sqrt[a^2 - b^2
])] + 2*d*(f*(c + d*x)*PolyLog[3, ((-I)*b*E^(I*(e + f*x)))/(-a + Sqrt[a^2 -
 b^2])] + I*d*PolyLog[4, (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])))/f^
3 + ((3*I)*d*(f^2*(c + d*x)^2*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^
2 - b^2])] + (2*I)*d*f*(c + d*x)*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a + Sqrt
[a^2 - b^2])] - 2*d^2*PolyLog[4, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2]
)]))/f^3))/(Sqrt[a^2 - b^2]*f)
```

fricas [C] time = 1.09, size = 2197, normalized size = 4.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+b*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] -1/4*(12*I*b*d^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(f*x + e)
- 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2
)/b^2))/b) - 12*I*b*d^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(f*
x + e) - 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^
2 - b^2)/b^2))/b) - 12*I*b*d^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*
a*cos(f*x + e) - 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*s
qrt(-(a^2 - b^2)/b^2))/b) + 12*I*b*d^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/
2*(-2*I*a*cos(f*x + e) - 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x
 + e))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(-3*I*b*d^3*f^2*x^2 - 6*I*b*c*d^2*f^2
*x - 3*I*b*c^2*d*f^2)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(f*x + e)
 + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^
2)/b^2) + 2*b)/b + 1) + 2*(3*I*b*d^3*f^2*x^2 + 6*I*b*c*d^2*f^2*x + 3*I*b*c^
2*d*f^2)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*
x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b
)/b + 1) + 2*(3*I*b*d^3*f^2*x^2 + 6*I*b*c*d^2*f^2*x + 3*I*b*c^2*d*f^2)*sqrt
(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(
b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2
*(-3*I*b*d^3*f^2*x^2 - 6*I*b*c*d^2*f^2*x - 3*I*b*c^2*d*f^2)*sqrt(-(a^2 - b^
2)/b^2)*dilog(-1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x +
 e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(b*d^3*e^3
 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*lo
g(2*b*cos(f*x + e) + 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*
a) + 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt(-(a
^2 - b^2)/b^2)*log(2*b*cos(f*x + e) - 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 -
 b^2)/b^2) - 2*I*a) - 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*
c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(f*x + e) + 2*I*b*sin(f*x + e)
+ 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*
b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(f*x + e) - 2
```

```
*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(b*d^3*f^3*x^3
+ 3*b*c*d^2*f^3*x^2 + 3*b*c^2*d*f^3*x + b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c
^2*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*
x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b
)/b) + 2*(b*d^3*f^3*x^3 + 3*b*c*d^2*f^3*x^2 + 3*b*c^2*d*f^3*x + b*d^3*e^3 -
 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*c
os(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt
(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b*d^3*f^3*x^3 + 3*b*c*d^2*f^3*x^2 + 3*b*c
^2*d*f^3*x + b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2)*sqrt(-(a^2 - b^
2)/b^2)*log(1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e)
 + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b*d^3*f^3*x^3 +
3*b*c*d^2*f^3*x^2 + 3*b*c^2*d*f^3*x + b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2
*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x
 + e) - 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)
/b) + 12*(b*d^3*f*x + b*c*d^2*f)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I
*a*cos(f*x + e) - 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*
sqrt(-(a^2 - b^2)/b^2))/b) - 12*(b*d^3*f*x + b*c*d^2*f)*sqrt(-(a^2 - b^2)/b
^2)*polylog(3, 1/2*(2*I*a*cos(f*x + e) - 2*a*sin(f*x + e) - 2*(b*cos(f*x +
e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(b*d^3*f*x + b*c*d^2
*f)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(f*x + e) - 2*a*sin(f*
x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))/b) -
 12*(b*d^3*f*x + b*c*d^2*f)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*c
os(f*x + e) - 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt
(-(a^2 - b^2)/b^2))/b))/((a^2 - b^2)*f^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^3}{b\sin\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+b*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3/(b*sin(f*x + e) + a), x)
```

maple [F] time = 0.76, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^3}{a+b\sin\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3/(a+b*sin(f*x+e)),x)
```

```
[Out] int((d*x+c)^3/(a+b*sin(f*x+e)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+b*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c+d\,x)^3}{a+b\,\sin\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^3/(a + b*sin(e + f*x)),x)
```

```
[Out] int((c + d*x)^3/(a + b*sin(e + f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^3}{a+b\sin\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3/(a+b*sin(f*x+e)),x)
```

```
[Out] Integral((c + d*x)**3/(a + b*sin(e + f*x)), x)
```

3.164 $\int \frac{(c+dx)^2}{a+b\sin(e+fx)}\,dx$

Optimal. Leaf size=367

$$-\frac{2d(c+dx)\text{Li}_2\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^2\sqrt{a^2-b^2}}+\frac{2d(c+dx)\text{Li}_2\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{f^2\sqrt{a^2-b^2}}-\frac{i(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f\sqrt{a^2-b^2}}+\frac{i(c+dx)^2\log\left(1-\frac{ibe^{i(e+}}{\sqrt{a^2-b}}\right.}{f\sqrt{a^2-b^2}}$$

```
[Out] -I*(d*x+c)^2*ln(1-I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/f/(a^2-b^2)^(1/2)
+I*(d*x+c)^2*ln(1-I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/f/(a^2-b^2)^(1/2)
-2*d*(d*x+c)*polylog(2,I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/f^2/(a^2-b^2
)^(1/2)+2*d*(d*x+c)*polylog(2,I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/f^2/(
a^2-b^2)^(1/2)-2*I*d^2*polylog(3,I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/f^
3/(a^2-b^2)^(1/2)+2*I*d^2*polylog(3,I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))
/f^3/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.82, antiderivative size = 367, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {3323, 2264, 2190, 2531, 2282, 6589}

$$-\frac{2d(c+dx)\text{PolyLog}\left(2,\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^2\sqrt{a^2-b^2}}+\frac{2d(c+dx)\text{PolyLog}\left(2,\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)}{f^2\sqrt{a^2-b^2}}-\frac{2id^2\text{PolyLog}\left(3,\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^3\sqrt{a^2-b^2}}+\frac{2id^2\text{PolyL}}{f^3}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2/(a + b*Sin[e + f*x]),x]
```

```
[Out] ((-I)*(c + d*x)^2*Log[1 - (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/(Sq
rt[a^2 - b^2]*f) + (I*(c + d*x)^2*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a
^2 - b^2])])/(Sqrt[a^2 - b^2]*f) - (2*d*(c + d*x)*PolyLog[2, (I*b*E^(I*(e +
 f*x)))/(a - Sqrt[a^2 - b^2])])/(Sqrt[a^2 - b^2]*f^2) + (2*d*(c + d*x)*Poly
Log[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])])/(Sqrt[a^2 - b^2]*f^2)
- ((2*I)*d^2*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/(Sqrt
[a^2 - b^2]*f^3) + ((2*I)*d^2*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^
2 - b^2])])/(Sqrt[a^2 - b^2]*f^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(c+dx)^2}{a+b\sin(e+fx)}\,dx = 2\int \frac{e^{i(e+fx)}(c+dx)^2}{ib+2ae^{i(e+fx)}-ibe^{2i(e+fx)}}\,dx$$

$$= -\frac{(2ib)\int \frac{e^{i(e+fx)}(c+dx)^2}{2a-2\sqrt{a^2-b^2}-2ibe^{i(e+fx)}}\,dx}{\sqrt{a^2-b^2}} + \frac{(2ib)\int \frac{e^{i(e+fx)}(c+dx)^2}{2a+2\sqrt{a^2-b^2}-2ibe^{i(e+fx)}}\,dx}{\sqrt{a^2-b^2}}$$

$$= -\frac{i(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{(2id)\int(c+dx)\log(\ldots}{\sqrt{a^2-\ldots}}$$

$$= -\frac{i(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} - \frac{2d(c+dx)\mathrm{Li}_2\left(\frac{ibe^{i(e\ldots}}{a-\sqrt{a\ldots}}\right.}{\sqrt{a^2-b^2}\,f^2}$$

$$= -\frac{i(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} - \frac{2d(c+dx)\mathrm{Li}_2\left(\frac{ibe^{i(e\ldots}}{a-\sqrt{a\ldots}}\right.}{\sqrt{a^2-b^2}\,f^2}$$

$$= -\frac{i(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} - \frac{2d(c+dx)\mathrm{Li}_2\left(\frac{ibe^{i(e\ldots}}{a-\sqrt{a\ldots}}\right.}{\sqrt{a^2-b^2}\,f^2}$$

Mathematica [A] time = 0.21, size = 296, normalized size = 0.81

$$-\frac{i\left(\frac{2d\left(d\mathrm{Li}_3\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)-if(c+dx)\mathrm{Li}_2\left(-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)\right)}{f^2}+\frac{2id\left(f(c+dx)\mathrm{Li}_2\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)+id\mathrm{Li}_3\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)\right)}{f^2}+(c+dx)^2\log\left(1+\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)\ldots\right.}{f\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2/(a + b*Sin[e + f*x]),x]
```

```
[Out] ((-I)*((c + d*x)^2*Log[1 + (I*b*E^(I*(e + f*x)))/(-a + Sqrt[a^2 - b^2])] -
(c + d*x)^2*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])] + (2*d*((-
I)*f*(c + d*x)*PolyLog[2, ((-I)*b*E^(I*(e + f*x)))/(-a + Sqrt[a^2 - b^2])]
+ d*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])]))/f^2 + ((2*I)*
d*(f*(c + d*x)*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])] + I*
d*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])]))/f^2))/(Sqrt[a^2
 - b^2]*f)
```

fricas [C] time = 0.61, size = 1553, normalized size = 4.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*d^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(f*x + e) - 2
*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b
^2))/b) - 2*b*d^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(f*x + e)
 - 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^
2)/b^2))/b) + 2*b*d^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(f*x
 + e) - 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2
 - b^2)/b^2))/b) - 2*b*d^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*co
s(f*x + e) - 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(
-(a^2 - b^2)/b^2))/b) + (-2*I*b*d^2*f*x - 2*I*b*c*d*f)*sqrt(-(a^2 - b^2)/b^
2)*dilog(-1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) -
I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (2*I*b*d^2*f*x + 2
*I*b*c*d*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(f*x + e) + 2*a*sin
(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) +
2*b)/b + 1) + (2*I*b*d^2*f*x + 2*I*b*c*d*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1
/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I*b*sin(f*
x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-2*I*b*d^2*f*x - 2*I*b*c*d*
f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e
) - 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b +
 1) - (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*
cos(f*x + e) + 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - (
b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(f*x
 + e) - 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + (b*d^2*e
^2 - 2*b*c*d*e*f + b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(f*x + e)
+ 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + (b*d^2*e^2 - 2
*b*c*d*e*f + b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(f*x + e) - 2*I*
b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - (b*d^2*f^2*x^2 + 2*b
*c*d*f^2*x - b*d^2*e^2 + 2*b*c*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a
*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sq
rt(-(a^2 - b^2)/b^2) + 2*b)/b) + (b*d^2*f^2*x^2 + 2*b*c*d*f^2*x - b*d^2*e^2
 + 2*b*c*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(f*x + e) + 2*a*si
n(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) +
 2*b)/b) - (b*d^2*f^2*x^2 + 2*b*c*d*f^2*x - b*d^2*e^2 + 2*b*c*d*e*f)*sqrt(-
(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos
(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (b*d^2*f^2
*x^2 + 2*b*c*d*f^2*x - b*d^2*e^2 + 2*b*c*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*log(
1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) + I*b*sin(f
*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b))/((a^2 - b^2)*f^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^2}{b\sin\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^2/(b*sin(f*x + e) + a), x)
```

maple [F] time = 0.48, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^2}{a+b\sin\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2/(a+b*sin(f*x+e)),x)
```

```
[Out] int((d*x+c)^2/(a+b*sin(f*x+e)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(c+d\,x)^2}{a+b\,\sin\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^2/(a + b*sin(e + f*x)),x)
```

```
[Out] int((c + d*x)^2/(a + b*sin(e + f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^2}{a+b\sin\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2/(a+b*sin(f*x+e)),x)
[Out] Integral((c + d*x)**2/(a + b*sin(e + f*x)), x)
```

3.165 $\int \frac{c+dx}{a+b\sin(e+fx)}\,dx$

Optimal. Leaf size=234

$$-\frac{i(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f\sqrt{a^2-b^2}}+\frac{i(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)}{f\sqrt{a^2-b^2}}-\frac{d\mathrm{Li}_2\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^2\sqrt{a^2-b^2}}+\frac{d\mathrm{Li}_2\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{f^2\sqrt{a^2-b^2}}$$

```
[Out] -I*(d*x+c)*ln(1-I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/f/(a^2-b^2)^(1/2)+I
*(d*x+c)*ln(1-I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/f/(a^2-b^2)^(1/2)-d*p
olylog(2,I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/f^2/(a^2-b^2)^(1/2)+d*poly
log(2,I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/f^2/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.45, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {3323, 2264, 2190, 2279, 2391}

$$-\frac{d\,\mathrm{PolyLog}\left(2,\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^2\sqrt{a^2-b^2}}+\frac{d\,\mathrm{PolyLog}\left(2,\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)}{f^2\sqrt{a^2-b^2}}-\frac{i(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f\sqrt{a^2-b^2}}+\frac{i(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)}{f\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)/(a + b*Sin[e + f*x]),x]
```

```
[Out] ((-I)*(c + d*x)*Log[1 - (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/(Sqrt
[a^2 - b^2]*f) + (I*(c + d*x)*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 -
 b^2])])/(Sqrt[a^2 - b^2]*f) - (d*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a - Sqr
t[a^2 - b^2])])/(Sqrt[a^2 - b^2]*f^2) + (d*PolyLog[2, (I*b*E^(I*(e + f*x)))
/(a + Sqrt[a^2 - b^2])])/(Sqrt[a^2 - b^2]*f^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
```

```
2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rubi steps

$$\int \frac{c+dx}{a+b\sin(e+fx)}\,dx = 2\int \frac{e^{i(e+fx)}(c+dx)}{ib+2ae^{i(e+fx)}-ibe^{2i(e+fx)}}\,dx$$

$$= -\frac{(2ib)\int \frac{e^{i(e+fx)}(c+dx)}{2a-2\sqrt{a^2-b^2}-2ibe^{i(e+fx)}}\,dx}{\sqrt{a^2-b^2}} + \frac{(2ib)\int \frac{e^{i(e+fx)}(c+dx)}{2a+2\sqrt{a^2-b^2}-2ibe^{i(e+fx)}}\,dx}{\sqrt{a^2-b^2}}$$

$$= -\frac{i(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{(id)\int \log\left(1-\frac{2ibe^{i(e+fx)}}{2a-2\sqrt{a^2-\cdots}}\right.}{\sqrt{a^2-b^2}\,f}$$

$$= -\frac{i(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{d\,\mathrm{Subst}\left(\int \frac{\log\left(1-\frac{2ibx}{2a-2\sqrt{a^2\cdots}}\right.}{x}\right.}{\sqrt{a^2-b^{\cdots}}}$$

$$= -\frac{i(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} + \frac{i(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f} - \frac{d\,\mathrm{Li}_2\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}\,f^2} + \frac{d\,\mathrm{Li}_2 \cdots}{\sqrt{\cdots}}$$

Mathematica [A] time = 0.04, size = 182, normalized size = 0.78

$$\frac{-if(c+dx)\left(\log\left(1+\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)-\log\left(1-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)\right)-d\mathrm{Li}_2\left(-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)+d\mathrm{Li}_2\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{f^2\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)/(a + b*Sin[e + f*x]),x]
```

```
[Out] ((-I)*f*(c + d*x)*(Log[1 + (I*b*E^(I*(e + f*x)))/(-a + Sqrt[a^2 - b^2])] -
Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])]) - d*PolyLog[2, ((-I)*
b*E^(I*(e + f*x)))/(-a + Sqrt[a^2 - b^2])] + d*PolyLog[2, (I*b*E^(I*(e + f*
x)))/(a + Sqrt[a^2 - b^2])])/(Sqrt[a^2 - b^2]*f^2)
```

fricas [B] time = 0.64, size = 1009, normalized size = 4.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] -1/4*(-2*I*b*d*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(f*x + e) + 2*a*
sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2)
 + 2*b)/b + 1) + 2*I*b*d*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(f*x +
 e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 -
 b^2)/b^2) + 2*b)/b + 1) + 2*I*b*d*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*
a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*s
qrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*I*b*d*sqrt(-(a^2 - b^2)/b^2)*dilog(
-1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) + I*b*sin(
f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(b*d*e - b*c*f)*sqrt(-(a
^2 - b^2)/b^2)*log(2*b*cos(f*x + e) + 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 -
 b^2)/b^2) + 2*I*a) + 2*(b*d*e - b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(
f*x + e) - 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(b*
d*e - b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(f*x + e) + 2*I*b*sin(f*x +
 e) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(b*d*e - b*c*f)*sqrt(-(a^2 -
b^2)/b^2)*log(-2*b*cos(f*x + e) - 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2
)/b^2) - 2*I*a) - 2*(b*d*f*x + b*d*e)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a
*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sq
rt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b*d*f*x + b*d*e)*sqrt(-(a^2 - b^2)/b^2)
*log(1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) - I*b*s
in(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b*d*f*x + b*d*e)*sqrt(-(
a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(
f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b*d*f*x
+ b*d*e)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x
```

```
+ e) - 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/
b))/((a^2 - b^2)*f^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{dx + c}{b \sin\left(fx + e\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)/(b*sin(f*x + e) + a), x)
```

maple [B] time = 0.13, size = 501, normalized size = 2.14

$$\frac{2ic \arctan\left(\frac{2ib\,e^{i(fx+e)}-2a}{2\sqrt{-a^2+b^2}}\right)}{f\sqrt{-a^2+b^2}}+\frac{d\ln\left(\frac{ia+b\,e^{i(fx+e)}-\sqrt{-a^2+b^2}}{ia-\sqrt{-a^2+b^2}}\right)x}{f\sqrt{-a^2+b^2}}+\frac{d\ln\left(\frac{ia+b\,e^{i(fx+e)}-\sqrt{-a^2+b^2}}{ia-\sqrt{-a^2+b^2}}\right)e}{f^2\sqrt{-a^2+b^2}}-\frac{d\ln\left(\frac{ia+b\,e^{i(fx+e)}+\sqrt{-a^2+b^2}}{ia+\sqrt{-a^2+b^2}}\right)x}{f\sqrt{-a^2+b^2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(a+b*sin(f*x+e)),x)
```

```
[Out] 2*I/f*c/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(f*x+e))-2*a)/(-a^2+b^2)^(
1/2))+1/f*d/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(f*x+e))-(-a^2+b^2)^(1/2))/(I*
a-(-a^2+b^2)^(1/2)))*x+1/f^2*d/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(f*x+e))-(-
a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*e-1/f*d/(-a^2+b^2)^(1/2)*ln((I*a+b*
exp(I*(f*x+e))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-1/f^2*d/(-a^2+b^
2)^(1/2)*ln((I*a+b*exp(I*(f*x+e))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))
*e-I/f^2*d/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(f*x+e))-(-a^2+b^2)^(1/2))/(
I*a-(-a^2+b^2)^(1/2)))+I/f^2*d/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(f*x+e))
+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-2*I/f^2*d*e/(-a^2+b^2)^(1/2)*arc
tan(1/2*(2*I*b*exp(I*(f*x+e))-2*a)/(-a^2+b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{c+d\,x}{a+b\,\sin\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/(a + b*sin(e + f*x)),x)
```

```
[Out] int((c + d*x)/(a + b*sin(e + f*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{c+dx}{a+b\sin\left(e+fx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sin(f*x+e)),x)
```

```
[Out] Integral((c + d*x)/(a + b*sin(e + f*x)), x)
```

3.166 $\int \frac{1}{(c+dx)(a+b\sin(e+fx))}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c+dx)(a+b\sin(e+fx))},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)/(a+b*sin(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)(a+b\sin(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)*(a + b*Sin[e + f*x])),x]
```

```
[Out] Defer[Int][1/((c + d*x)*(a + b*Sin[e + f*x])), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)(a+b\sin(e+fx))}\,dx = \int \frac{1}{(c+dx)(a+b\sin(e+fx))}\,dx$$

Mathematica [A] time = 0.43, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)(a+b\sin(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)*(a + b*Sin[e + f*x])),x]
```

```
[Out] Integrate[1/((c + d*x)*(a + b*Sin[e + f*x])), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{adx+ac+(bdx+bc)\sin\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sin(f*x+e)),x, algorithm="fricas")
[Out] integral(1/(a*d*x + a*c + (b*d*x + b*c)*sin(f*x + e)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(b\sin\left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sin(f*x+e)),x, algorithm="giac")
[Out] integrate(1/((d*x + c)*(b*sin(f*x + e) + a)), x)
```

maple [A] time = 0.10, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(a+b\sin\left(fx+e\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)/(a+b*sin(f*x+e)),x)
[Out] int(1/(d*x+c)/(a+b*sin(f*x+e)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(b\sin\left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sin(f*x+e)),x, algorithm="maxima")
[Out] integrate(1/((d*x + c)*(b*sin(f*x + e) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\sin\left(e+f\,x\right)\right)\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*sin(e + f*x))*(c + d*x)),x)
[Out] int(1/((a + b*sin(e + f*x))*(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(a + b\sin\left(e + fx\right)\right)(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sin(f*x+e)),x)
```

```
[Out] Integral(1/((a + b*sin(e + f*x))*(c + d*x)), x)
```

3.167 $\int \frac{1}{(c+dx)^2(a+b\sin(e+fx))}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c+dx)^2(a+b\sin(e+fx))},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)^2/(a+b*sin(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)^2(a+b\sin(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)^2*(a + b*Sin[e + f*x])),x]
```

```
[Out] Defer[Int][1/((c + d*x)^2*(a + b*Sin[e + f*x])), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)^2(a+b\sin(e+fx))}\,dx=\int \frac{1}{(c+dx)^2(a+b\sin(e+fx))}\,dx$$

Mathematica [A] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)^2(a+b\sin(e+fx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)^2*(a + b*Sin[e + f*x])),x]
```

```
[Out] Integrate[1/((c + d*x)^2*(a + b*Sin[e + f*x])), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{ad^2x^2+2\,acdx+ac^2+\left(bd^2x^2+2\,bcdx+bc^2\right)\sin\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] integral(1/(a*d^2*x^2 + 2*a*c*d*x + a*c^2 + (b*d^2*x^2 + 2*b*c*d*x + b*c^2)
*sin(f*x + e)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2\left(b\sin\left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)^2*(b*sin(f*x + e) + a)), x)
```

maple [A] time = 0.10, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2\left(a+b\sin\left(fx+e\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^2/(a+b*sin(f*x+e)),x)
```

```
[Out] int(1/(d*x+c)^2/(a+b*sin(f*x+e)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)^2\left(b\sin\left(fx+e\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] integrate(1/((d*x + c)^2*(b*sin(f*x + e) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\sin\left(e+f\,x\right)\right)\,{\left(c+d\,x\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*sin(e + f*x))*(c + d*x)^2),x)
```

```
[Out] int(1/((a + b*sin(e + f*x))*(c + d*x)^2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)**2/(a+b*sin(f*x+e)),x)
```

```
[Out] Timed out
```

3.168 $\int \frac{(c+dx)^3}{(a+b\sin(e+fx))^2}\,dx$

Optimal. Leaf size=925

$$-\frac{6\text{Li}_3\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)d^3}{\left(a^2-b^2\right)f^4}-\frac{6\text{Li}_3\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)d^3}{\left(a^2-b^2\right)f^4}+\frac{6a\text{Li}_4\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)d^3}{\left(a^2-b^2\right)^{3/2}f^4}-\frac{6a\text{Li}_4\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)d^3}{\left(a^2-b^2\right)^{3/2}f^4}+\frac{6i(c+dx)\text{Li}_2\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)d^{}}{\left(a^2-b^2\right)f^3}$$

```
[Out] I*a*(d*x+c)^3*ln(1-I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/
f-3*d*(d*x+c)^2*ln(1-I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)/f^2+
6*I*d^2*(d*x+c)*polylog(2,I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)
/f^3-3*d*(d*x+c)^2*ln(1-I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)/f
^2-6*I*a*d^2*(d*x+c)*polylog(3,I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/(a^2
-b^2)^(3/2)/f^3+6*I*d^2*(d*x+c)*polylog(2,I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(
1/2)))/(a^2-b^2)/f^3-3*a*d*(d*x+c)^2*polylog(2,I*b*exp(I*(f*x+e))/(a-(a^2-b
^2)^(1/2)))/(a^2-b^2)^(3/2)/f^2+I*(d*x+c)^3/(a^2-b^2)/f+3*a*d*(d*x+c)^2*pol
ylog(2,I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f^2-6*d^3*po
lylog(3,I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)/f^4+6*I*a*d^2*(d*
x+c)*polylog(3,I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f^3-
6*d^3*polylog(3,I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)/f^4-I*a*(
d*x+c)^3*ln(1-I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f+6*a
*d^3*polylog(4,I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f^4-
6*a*d^3*polylog(4,I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f
^4+b*(d*x+c)^3*cos(f*x+e)/(a^2-b^2)/f/(a+b*sin(f*x+e))
```

Rubi [A] time = 1.65, antiderivative size = 925, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {3324, 3323, 2264, 2190, 2531, 6609, 2282, 6589, 4519}

$$-\frac{6\text{PolyLog}\left(3,\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)d^3}{\left(a^2-b^2\right)f^4}-\frac{6\text{PolyLog}\left(3,\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)d^3}{\left(a^2-b^2\right)f^4}+\frac{6a\text{PolyLog}\left(4,\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)d^3}{\left(a^2-b^2\right)^{3/2}f^4}-\frac{6a\text{PolyLog}\left(4,\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right.}{\left(a^2-b^2\right)^{3/2}f^4}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^3/(a + b*Sin[e + f*x])^2,x]
```

```
[Out] (I*(c + d*x)^3)/((a^2 - b^2)*f) - (3*d*(c + d*x)^2*Log[1 - (I*b*E^(I*(e + f
*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)*f^2) - (I*a*(c + d*x)^3*Log[1 -
(I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*f) - (3*d*
(c + d*x)^2*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b
^2)*f^2) + (I*a*(c + d*x)^3*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b
^2])])/((a^2 - b^2)^(3/2)*f) + ((6*I)*d^2*(c + d*x)*PolyLog[2, (I*b*E^(I*(e
```

```
 + f*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)*f^3) - (3*a*d*(c + d*x)^2*Po
lyLog[2, (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*f
^2) + ((6*I)*d^2*(c + d*x)*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 -
 b^2])])/((a^2 - b^2)*f^3) + (3*a*d*(c + d*x)^2*PolyLog[2, (I*b*E^(I*(e + f
*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*f^2) - (6*d^3*PolyLog[3, (
I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)*f^4) - ((6*I)*a*d
^2*(c + d*x)*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/((a^2
 - b^2)^(3/2)*f^3) - (6*d^3*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2
- b^2])])/((a^2 - b^2)*f^4) + ((6*I)*a*d^2*(c + d*x)*PolyLog[3, (I*b*E^(I*(
e + f*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*f^3) + (6*a*d^3*PolyL
og[4, (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*f^4)
 - (6*a*d^3*PolyLog[4, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])])/((a^2
- b^2)^(3/2)*f^4) + (b*(c + d*x)^3*Cos[e + f*x])/((a^2 - b^2)*f*(a + b*Sin[
e + f*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(c+dx)^3}{(a+b\sin(e+fx))^2}\,dx = \frac{b(c+dx)^3\cos(e+fx)}{\left(a^2-b^2\right)f(a+b\sin(e+fx))} + \frac{a\int \frac{(c+dx)^3}{a+b\sin(e+fx)}\,dx}{a^2-b^2} - \frac{(3bd)\int \frac{(c+dx)^2\cos(e+fx)}{a+b\sin(e+fx)}\,dx}{\left(a^2-b^2\right)f}$$

$$= \frac{i(c+dx)^3}{\left(a^2-b^2\right)f} + \frac{b(c+dx)^3\cos(e+fx)}{\left(a^2-b^2\right)f(a+b\sin(e+fx))} + \frac{(2a)\int \frac{e^{i(e+fx)}(c+dx)^3}{ib+2ae^{i(e+fx)}-ibe^{2i(e+fx)}}\,dx}{a^2-b^2} - \frac{(3ba}{}$$

$$= \frac{i(c+dx)^3}{\left(a^2-b^2\right)f} - \frac{3d(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{3d(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} + \frac{}{(}$$

$$= \frac{i(c+dx)^3}{\left(a^2-b^2\right)f} - \frac{3d(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{ia(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f} - \frac{3a}{}$$

$$= \frac{i(c+dx)^3}{\left(a^2-b^2\right)f} - \frac{3d(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{ia(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f} - \frac{3a}{}$$

$$= \frac{i(c+dx)^3}{\left(a^2-b^2\right)f} - \frac{3d(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{ia(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f} - \frac{3a}{}$$

$$= \frac{i(c+dx)^3}{\left(a^2-b^2\right)f} - \frac{3d(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{ia(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f} - \frac{3a}{}$$

$$= \frac{i(c+dx)^3}{\left(a^2-b^2\right)f} - \frac{3d(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{ia(c+dx)^3\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f} - \frac{3a}{}$$

Mathematica [A] time = 3.51, size = 742, normalized size = 0.80

$$-\frac{\frac{ia\left(-3id\left(f^2(c+dx)^2\text{Li}_2\left(-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)+2idf(c+dx)\text{Li}_3\left(-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)-2d^2\text{Li}_4\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)\right)+3id\left(f^2(c+dx)^2\text{Li}_2\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)+2idf(c+dx)\text{Li}_3\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right.\right.}{\sqrt{a^2-b^2}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^3/(a + b*Sin[e + f*x])^2,x]
```

```
[Out] (I*f^3*(c + d*x)^3 - 3*d*f^2*(c + d*x)^2*Log[1 + (I*b*E^(I*(e + f*x)))/(-a
+ Sqrt[a^2 - b^2])] - 3*d*f^2*(c + d*x)^2*Log[1 - (I*b*E^(I*(e + f*x)))/(a
+ Sqrt[a^2 - b^2])] + (6*I)*d^2*(f*(c + d*x)*PolyLog[2, (I*b*E^(I*(e + f*x)
))/(a - Sqrt[a^2 - b^2])] + I*d*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a - Sqrt[
a^2 - b^2])]) + (6*I)*d^2*(f*(c + d*x)*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a
+ Sqrt[a^2 - b^2])] + I*d*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 -
b^2])]) - (I*a*(f^3*(c + d*x)^3*Log[1 + (I*b*E^(I*(e + f*x)))/(-a + Sqrt[a^
2 - b^2])] - f^3*(c + d*x)^3*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 -
b^2])] - (3*I)*d*(f^2*(c + d*x)^2*PolyLog[2, ((-I)*b*E^(I*(e + f*x)))/(-a +
 Sqrt[a^2 - b^2])] + (2*I)*d*f*(c + d*x)*PolyLog[3, ((-I)*b*E^(I*(e + f*x))
)/(-a + Sqrt[a^2 - b^2])] - 2*d^2*PolyLog[4, (I*b*E^(I*(e + f*x)))/(a - Sqr
t[a^2 - b^2])]) + (3*I)*d*(f^2*(c + d*x)^2*PolyLog[2, (I*b*E^(I*(e + f*x)))
/(a + Sqrt[a^2 - b^2])] + (2*I)*d*f*(c + d*x)*PolyLog[3, (I*b*E^(I*(e + f*x
)))/(a + Sqrt[a^2 - b^2])] - 2*d^2*PolyLog[4, (I*b*E^(I*(e + f*x)))/(a + Sq
rt[a^2 - b^2])])))/Sqrt[a^2 - b^2] + (b*f^3*(c + d*x)^3*Cos[e + f*x])/(a +
b*Sin[e + f*x]))/((a^2 - b^2)*f^4)
```

fricas [C] time = 0.99, size = 5136, normalized size = 5.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+b*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*(-6*I*a*b^2*d^3*sin(f*x + e) - 6*I*a^2*b*d^3)*sqrt(-(a^2 - b^2)/b^2)
*polylog(4, 1/2*(2*I*a*cos(f*x + e) - 2*a*sin(f*x + e) + 2*(b*cos(f*x + e)
+ I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(6*I*a*b^2*d^3*sin(f*x +
 e) + 6*I*a^2*b*d^3)*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(f*x +
 e) - 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 -
 b^2)/b^2))/b) + 2*(6*I*a*b^2*d^3*sin(f*x + e) + 6*I*a^2*b*d^3)*sqrt(-(a^2
- b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(f*x + e) - 2*a*sin(f*x + e) + 2*(b*c
os(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(-6*I*a*b^2*
d^3*sin(f*x + e) - 6*I*a^2*b*d^3)*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2
*I*a*cos(f*x + e) - 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e)
)*sqrt(-(a^2 - b^2)/b^2))/b) + 4*((a^2*b - b^3)*d^3*f^3*x^3 + 3*(a^2*b - b^
3)*c*d^2*f^3*x^2 + 3*(a^2*b - b^3)*c^2*d*f^3*x + (a^2*b - b^3)*c^3*f^3)*cos
(f*x + e) + (-12*I*(a^3 - a*b^2)*d^3*f*x - 12*I*(a^3 - a*b^2)*c*d^2*f + (-1
2*I*(a^2*b - b^3)*d^3*f*x - 12*I*(a^2*b - b^3)*c*d^2*f)*sin(f*x + e) + 2*(3
*I*a^2*b*d^3*f^2*x^2 + 6*I*a^2*b*c*d^2*f^2*x + 3*I*a^2*b*c^2*d*f^2 + (3*I*a
*b^2*d^3*f^2*x^2 + 6*I*a*b^2*c*d^2*f^2*x + 3*I*a*b^2*c^2*d*f^2)*sin(f*x + e
))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*x + e
) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b +
 1) + (-12*I*(a^3 - a*b^2)*d^3*f*x - 12*I*(a^3 - a*b^2)*c*d^2*f + (-12*I*(a
^2*b - b^3)*d^3*f*x - 12*I*(a^2*b - b^3)*c*d^2*f)*sin(f*x + e) + 2*(-3*I*a^
2*b*d^3*f^2*x^2 - 6*I*a^2*b*c*d^2*f^2*x - 3*I*a^2*b*c^2*d*f^2 + (-3*I*a*b^2
```

```
*d^3*f^2*x^2 - 6*I*a*b^2*c*d^2*f^2*x - 3*I*a*b^2*c^2*d*f^2)*sin(f*x + e))*s
qrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) -
2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)
+ (12*I*(a^3 - a*b^2)*d^3*f*x + 12*I*(a^3 - a*b^2)*c*d^2*f + (12*I*(a^2*b -
 b^3)*d^3*f*x + 12*I*(a^2*b - b^3)*c*d^2*f)*sin(f*x + e) + 2*(-3*I*a^2*b*d^
3*f^2*x^2 - 6*I*a^2*b*c*d^2*f^2*x - 3*I*a^2*b*c^2*d*f^2 + (-3*I*a*b^2*d^3*f
^2*x^2 - 6*I*a*b^2*c*d^2*f^2*x - 3*I*a*b^2*c^2*d*f^2)*sin(f*x + e))*sqrt(-(
a^2 - b^2)/b^2))*dilog(-1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*
cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (12
*I*(a^3 - a*b^2)*d^3*f*x + 12*I*(a^3 - a*b^2)*c*d^2*f + (12*I*(a^2*b - b^3)
*d^3*f*x + 12*I*(a^2*b - b^3)*c*d^2*f)*sin(f*x + e) + 2*(3*I*a^2*b*d^3*f^2*
x^2 + 6*I*a^2*b*c*d^2*f^2*x + 3*I*a^2*b*c^2*d*f^2 + (3*I*a*b^2*d^3*f^2*x^2
+ 6*I*a*b^2*c*d^2*f^2*x + 3*I*a*b^2*c^2*d*f^2)*sin(f*x + e))*sqrt(-(a^2 - b
^2)/b^2))*dilog(-1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x
 + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(3*(a^3
- a*b^2)*d^3*e^2 - 6*(a^3 - a*b^2)*c*d^2*e*f + 3*(a^3 - a*b^2)*c^2*d*f^2 +
3*((a^2*b - b^3)*d^3*e^2 - 2*(a^2*b - b^3)*c*d^2*e*f + (a^2*b - b^3)*c^2*d*
f^2)*sin(f*x + e) + (a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*
f^2 - a^2*b*c^3*f^3 + (a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*b^2*c^2*d*
e*f^2 - a*b^2*c^3*f^3)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(f*
x + e) + 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(3*(a
^3 - a*b^2)*d^3*e^2 - 6*(a^3 - a*b^2)*c*d^2*e*f + 3*(a^3 - a*b^2)*c^2*d*f^2
 + 3*((a^2*b - b^3)*d^3*e^2 - 2*(a^2*b - b^3)*c*d^2*e*f + (a^2*b - b^3)*c^2
*d*f^2)*sin(f*x + e) + (a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d
*e*f^2 - a^2*b*c^3*f^3 + (a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*b^2*c^2
*d*e*f^2 - a*b^2*c^3*f^3)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos
(f*x + e) - 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(3
*(a^3 - a*b^2)*d^3*e^2 - 6*(a^3 - a*b^2)*c*d^2*e*f + 3*(a^3 - a*b^2)*c^2*d*
f^2 + 3*((a^2*b - b^3)*d^3*e^2 - 2*(a^2*b - b^3)*c*d^2*e*f + (a^2*b - b^3)*
c^2*d*f^2)*sin(f*x + e) - (a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^
2*d*e*f^2 - a^2*b*c^3*f^3 + (a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*b^2*
c^2*d*e*f^2 - a*b^2*c^3*f^3)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b
*cos(f*x + e) + 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) -
2*(3*(a^3 - a*b^2)*d^3*e^2 - 6*(a^3 - a*b^2)*c*d^2*e*f + 3*(a^3 - a*b^2)*c^
2*d*f^2 + 3*((a^2*b - b^3)*d^3*e^2 - 2*(a^2*b - b^3)*c*d^2*e*f + (a^2*b - b
^3)*c^2*d*f^2)*sin(f*x + e) - (a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*
b*c^2*d*e*f^2 - a^2*b*c^3*f^3 + (a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*
b^2*c^2*d*e*f^2 - a*b^2*c^3*f^3)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(
-2*b*cos(f*x + e) - 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a
) - 2*(3*(a^3 - a*b^2)*d^3*f^2*x^2 + 6*(a^3 - a*b^2)*c*d^2*f^2*x - 3*(a^3 -
 a*b^2)*d^3*e^2 + 6*(a^3 - a*b^2)*c*d^2*e*f + 3*((a^2*b - b^3)*d^3*f^2*x^2
+ 2*(a^2*b - b^3)*c*d^2*f^2*x - (a^2*b - b^3)*d^3*e^2 + 2*(a^2*b - b^3)*c*d
^2*e*f)*sin(f*x + e) - (a^2*b*d^3*f^3*x^3 + 3*a^2*b*c*d^2*f^3*x^2 + 3*a^2*b
*c^2*d*f^3*x + a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 +
(a*b^2*d^3*f^3*x^3 + 3*a*b^2*c*d^2*f^3*x^2 + 3*a*b^2*c^2*d*f^3*x + a*b^2*d^
```

```
3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*b^2*c^2*d*e*f^2)*sin(f*x + e))*sqrt(-(a^2
 - b^2)/b^2))*log(1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x
 + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(3*(a^3 - a*
b^2)*d^3*f^2*x^2 + 6*(a^3 - a*b^2)*c*d^2*f^2*x - 3*(a^3 - a*b^2)*d^3*e^2 +
6*(a^3 - a*b^2)*c*d^2*e*f + 3*((a^2*b - b^3)*d^3*f^2*x^2 + 2*(a^2*b - b^3)*
c*d^2*f^2*x - (a^2*b - b^3)*d^3*e^2 + 2*(a^2*b - b^3)*c*d^2*e*f)*sin(f*x +
e) + (a^2*b*d^3*f^3*x^3 + 3*a^2*b*c*d^2*f^3*x^2 + 3*a^2*b*c^2*d*f^3*x + a^2
*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 + (a*b^2*d^3*f^3*x^3
 + 3*a*b^2*c*d^2*f^3*x^2 + 3*a*b^2*c^2*d*f^3*x + a*b^2*d^3*e^3 - 3*a*b^2*c*
d^2*e^2*f + 3*a*b^2*c^2*d*e*f^2)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(
1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*
x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(3*(a^3 - a*b^2)*d^3*f^2*x^2 +
 6*(a^3 - a*b^2)*c*d^2*f^2*x - 3*(a^3 - a*b^2)*d^3*e^2 + 6*(a^3 - a*b^2)*c*
d^2*e*f + 3*((a^2*b - b^3)*d^3*f^2*x^2 + 2*(a^2*b - b^3)*c*d^2*f^2*x - (a^2
*b - b^3)*d^3*e^2 + 2*(a^2*b - b^3)*c*d^2*e*f)*sin(f*x + e) - (a^2*b*d^3*f^
3*x^3 + 3*a^2*b*c*d^2*f^3*x^2 + 3*a^2*b*c^2*d*f^3*x + a^2*b*d^3*e^3 - 3*a^2
*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 + (a*b^2*d^3*f^3*x^3 + 3*a*b^2*c*d^2*f
^3*x^2 + 3*a*b^2*c^2*d*f^3*x + a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*b^
2*c^2*d*e*f^2)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(-2*I*a*cos(f*
x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^
2 - b^2)/b^2) + 2*b)/b) - 2*(3*(a^3 - a*b^2)*d^3*f^2*x^2 + 6*(a^3 - a*b^2)*
c*d^2*f^2*x - 3*(a^3 - a*b^2)*d^3*e^2 + 6*(a^3 - a*b^2)*c*d^2*e*f + 3*((a^2
*b - b^3)*d^3*f^2*x^2 + 2*(a^2*b - b^3)*c*d^2*f^2*x - (a^2*b - b^3)*d^3*e^2
 + 2*(a^2*b - b^3)*c*d^2*e*f)*sin(f*x + e) + (a^2*b*d^3*f^3*x^3 + 3*a^2*b*c
*d^2*f^3*x^2 + 3*a^2*b*c^2*d*f^3*x + a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f +
3*a^2*b*c^2*d*e*f^2 + (a*b^2*d^3*f^3*x^3 + 3*a*b^2*c*d^2*f^3*x^2 + 3*a*b^2*
c^2*d*f^3*x + a*b^2*d^3*e^3 - 3*a*b^2*c*d^2*e^2*f + 3*a*b^2*c^2*d*e*f^2)*si
n(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(
f*x + e) - 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2
*b)/b) - 12*((a^2*b - b^3)*d^3*sin(f*x + e) + (a^3 - a*b^2)*d^3 + (a^2*b*d^
3*f*x + a^2*b*c*d^2*f + (a*b^2*d^3*f*x + a*b^2*c*d^2*f)*sin(f*x + e))*sqrt(
-(a^2 - b^2)/b^2))*polylog(3, 1/2*(2*I*a*cos(f*x + e) - 2*a*sin(f*x + e) +
2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*((a^2
*b - b^3)*d^3*sin(f*x + e) + (a^3 - a*b^2)*d^3 - (a^2*b*d^3*f*x + a^2*b*c*d
^2*f + (a*b^2*d^3*f*x + a*b^2*c*d^2*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2)
)*polylog(3, 1/2*(2*I*a*cos(f*x + e) - 2*a*sin(f*x + e) - 2*(b*cos(f*x + e)
 + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*((a^2*b - b^3)*d^3*sin
(f*x + e) + (a^3 - a*b^2)*d^3 + (a^2*b*d^3*f*x + a^2*b*c*d^2*f + (a*b^2*d^3
*f*x + a*b^2*c*d^2*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*polylog(3, 1/2*
(-2*I*a*cos(f*x + e) - 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x +
 e))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*((a^2*b - b^3)*d^3*sin(f*x + e) + (a^3
 - a*b^2)*d^3 - (a^2*b*d^3*f*x + a^2*b*c*d^2*f + (a*b^2*d^3*f*x + a*b^2*c*d
^2*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*polylog(3, 1/2*(-2*I*a*cos(f*x
+ e) - 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2
- b^2)/b^2))/b))/((a^4*b - 2*a^2*b^3 + b^5)*f^4*sin(f*x + e) + (a^5 - 2*a^3
```

```
*b^2 + a*b^4)*f^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^3}{\left(b\sin\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+b*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^3/(b*sin(f*x + e) + a)^2, x)
```

maple [F] time = 3.19, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^3}{\left(a+b\sin\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^3/(a+b*sin(f*x+e))^2,x)
```

```
[Out] int((d*x+c)^3/(a+b*sin(f*x+e))^2,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^3/(a+b*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^3/(a + b*sin(e + f*x))^2,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**3/(a+b*sin(f*x+e))**2,x)
```

```
[Out] Timed out
```

3.169 $\int \frac{(c+dx)^2}{(a+b\sin(e+fx))^2}\,dx$

Optimal. Leaf size=671

$$-\frac{2ad(c+dx)\text{Li}_2\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^2\left(a^2-b^2\right)^{3/2}}+\frac{2ad(c+dx)\text{Li}_2\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{f^2\left(a^2-b^2\right)^{3/2}}-\frac{2d(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^2\left(a^2-b^2\right)}-\frac{2d(c+dx)\log\left(1-\frac{ib}{\sqrt{a}}\right.}{f^2\left(a^2-b^2\right)}$$

```
[Out] I*(d*x+c)^2/(a^2-b^2)/f-2*d*(d*x+c)*ln(1-I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1
/2)))/(a^2-b^2)/f^2-I*a*(d*x+c)^2*ln(1-I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2
)))/(a^2-b^2)^(3/2)/f-2*d*(d*x+c)*ln(1-I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2
)))/(a^2-b^2)/f^2+I*a*(d*x+c)^2*ln(1-I*b*exp(I*(f*x+e))/(a+(a^2-b^2)^(1/2))
)/(a^2-b^2)^(3/2)/f+2*I*d^2*polylog(2,I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1/2)
))/(a^2-b^2)/f^3-2*a*d*(d*x+c)*polylog(2,I*b*exp(I*(f*x+e))/(a-(a^2-b^2)^(1
/2)))/(a^2-b^2)^(3/2)/f^2+2*I*d^2*polylog(2,I*b*exp(I*(f*x+e))/(a+(a^2-b^2)
^(1/2)))/(a^2-b^2)/f^3+2*a*d*(d*x+c)*polylog(2,I*b*exp(I*(f*x+e))/(a+(a^2-b
^2)^(1/2)))/(a^2-b^2)^(3/2)/f^2-2*I*a*d^2*polylog(3,I*b*exp(I*(f*x+e))/(a-(
a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f^3+2*I*a*d^2*polylog(3,I*b*exp(I*(f*x+e))
/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f^3+b*(d*x+c)^2*cos(f*x+e)/(a^2-b^2)/
f/(a+b*sin(f*x+e))
```

Rubi [A] time = 1.21, antiderivative size = 671, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {3324, 3323, 2264, 2190, 2531, 2282, 6589, 4519, 2279, 2391}

$$-\frac{2ad(c+dx)\text{PolyLog}\left(2,\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^2\left(a^2-b^2\right)^{3/2}}+\frac{2ad(c+dx)\text{PolyLog}\left(2,\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)}{f^2\left(a^2-b^2\right)^{3/2}}+\frac{2id^2\text{PolyLog}\left(2,\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^3\left(a^2-b^2\right)}+\frac{2id^2\text{Pol}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2/(a + b*Sin[e + f*x])^2,x]
```

```
[Out] (I*(c + d*x)^2)/((a^2 - b^2)*f) - (2*d*(c + d*x)*Log[1 - (I*b*E^(I*(e + f*x
)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)*f^2) - (I*a*(c + d*x)^2*Log[1 - (I
*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*f) - (2*d*(c
 + d*x)*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)*
f^2) + (I*a*(c + d*x)^2*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])
])/((a^2 - b^2)^(3/2)*f) + ((2*I)*d^2*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a -
 Sqrt[a^2 - b^2])])/((a^2 - b^2)*f^3) - (2*a*d*(c + d*x)*PolyLog[2, (I*b*E^
(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*f^2) + ((2*I)*d^2
*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)*f^3)
```

```
 + (2*a*d*(c + d*x)*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])]
)/((a^2 - b^2)^(3/2)*f^2) - ((2*I)*a*d^2*PolyLog[3, (I*b*E^(I*(e + f*x)))/(
a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*f^3) + ((2*I)*a*d^2*PolyLog[3, (I
*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*f^3) + (b*(c
 + d*x)^2*Cos[e + f*x])/((a^2 - b^2)*f*(a + b*Sin[e + f*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
```

```
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(c+dx)^2}{(a+b\sin(e+fx))^2}\,dx = \frac{b(c+dx)^2\cos(e+fx)}{\left(a^2-b^2\right)f(a+b\sin(e+fx))} + \frac{a\int \frac{(c+dx)^2}{a+b\sin(e+fx)}\,dx}{a^2-b^2} - \frac{(2bd)\int \frac{(c+dx)\cos(e+fx)}{a+b\sin(e+fx)}\,dx}{\left(a^2-b^2\right)f}$$

$$= \frac{i(c+dx)^2}{\left(a^2-b^2\right)f} + \frac{b(c+dx)^2\cos(e+fx)}{\left(a^2-b^2\right)f(a+b\sin(e+fx))} + \frac{(2a)\int \frac{e^{i(e+fx)}(c+dx)^2}{ib+2ae^{i(e+fx)}-ibe^{2i(e+fx)}}\,dx}{a^2-b^2} - \frac{(2bd)}{}$$

$$= \frac{i(c+dx)^2}{\left(a^2-b^2\right)f} - \frac{2d(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{2d(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} + \frac{b}{(a^2-}$$

$$= \frac{i(c+dx)^2}{\left(a^2-b^2\right)f} - \frac{2d(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{ia(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f} - \frac{2d(c}{}$$

$$= \frac{i(c+dx)^2}{\left(a^2-b^2\right)f} - \frac{2d(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{ia(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f} - \frac{2d(c}{}$$

$$= \frac{i(c+dx)^2}{\left(a^2-b^2\right)f} - \frac{2d(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{ia(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f} - \frac{2d(c}{}$$

$$= \frac{i(c+dx)^2}{\left(a^2-b^2\right)f} - \frac{2d(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)f^2} - \frac{ia(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f} - \frac{2d(c}{}$$

Mathematica [A] time = 1.77, size = 530, normalized size = 0.79

$$-\frac{ia\left(f^2(c+dx)^2\log\left(1+\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)-f^2(c+dx)^2\log\left(1-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)-2idf(c+dx)\text{Li}_2\left(-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)+2idf(c+dx)\text{Li}_2\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)+2d^2\text{Li}_3\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)-2d^2\text{L}}{\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2/(a + b*Sin[e + f*x])^2,x]
```

```
[Out] (I*f^2*(c + d*x)^2 - 2*d*f*(c + d*x)*Log[1 + (I*b*E^(I*(e + f*x)))/(-a + Sq
rt[a^2 - b^2])] - 2*d*f*(c + d*x)*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a
^2 - b^2])] + (2*I)*d^2*PolyLog[2, ((-I)*b*E^(I*(e + f*x)))/(-a + Sqrt[a^2
```

```
- b^2])] + (2*I)*d^2*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])
] - (I*a*(f^2*(c + d*x)^2*Log[1 + (I*b*E^(I*(e + f*x)))/(-a + Sqrt[a^2 - b^
2])] - f^2*(c + d*x)^2*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])]
 - (2*I)*d*f*(c + d*x)*PolyLog[2, ((-I)*b*E^(I*(e + f*x)))/(-a + Sqrt[a^2 -
 b^2])] + (2*I)*d*f*(c + d*x)*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^
2 - b^2])] + 2*d^2*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])]
- 2*d^2*PolyLog[3, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])]))/Sqrt[a^2
- b^2] + (b*f^2*(c + d*x)^2*Cos[e + f*x])/(a + b*Sin[e + f*x]))/((a^2 - b^2
)*f^3)
```

fricas [C] time = 0.76, size = 3113, normalized size = 4.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] -1/4*(4*(a*b^2*d^2*sin(f*x + e) + a^2*b*d^2)*sqrt(-(a^2 - b^2)/b^2)*polylog
(3, 1/2*(2*I*a*cos(f*x + e) - 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I*b*si
n(f*x + e))*sqrt(-(a^2 - b^2)/b^2))/b) - 4*(a*b^2*d^2*sin(f*x + e) + a^2*b*
d^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(f*x + e) - 2*a*sin(f*
x + e) - 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))/b) +
 4*(a*b^2*d^2*sin(f*x + e) + a^2*b*d^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1
/2*(-2*I*a*cos(f*x + e) - 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*
x + e))*sqrt(-(a^2 - b^2)/b^2))/b) - 4*(a*b^2*d^2*sin(f*x + e) + a^2*b*d^2)
*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(f*x + e) - 2*a*sin(f*x +
 e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))/b) - 4*
((a^2*b - b^3)*d^2*f^2*x^2 + 2*(a^2*b - b^3)*c*d*f^2*x + (a^2*b - b^3)*c^2*
f^2)*cos(f*x + e) - (-4*I*(a^2*b - b^3)*d^2*sin(f*x + e) - 4*I*(a^3 - a*b^2
)*d^2 + 2*(2*I*a^2*b*d^2*f*x + 2*I*a^2*b*c*d*f + (2*I*a*b^2*d^2*f*x + 2*I*a
*b^2*c*d*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*cos(f*x
 + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2
 - b^2)/b^2) + 2*b)/b + 1) - (-4*I*(a^2*b - b^3)*d^2*sin(f*x + e) - 4*I*(a^
3 - a*b^2)*d^2 + 2*(-2*I*a^2*b*d^2*f*x - 2*I*a^2*b*c*d*f + (-2*I*a*b^2*d^2*
f*x - 2*I*a*b^2*c*d*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*
I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))
*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (4*I*(a^2*b - b^3)*d^2*sin(f*x + e)
 + 4*I*(a^3 - a*b^2)*d^2 + 2*(-2*I*a^2*b*d^2*f*x - 2*I*a^2*b*c*d*f + (-2*I*
a*b^2*d^2*f*x - 2*I*a*b^2*c*d*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*dilo
g(-1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I*b*si
n(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (4*I*(a^2*b - b^3)*d^2*s
in(f*x + e) + 4*I*(a^3 - a*b^2)*d^2 + 2*(2*I*a^2*b*d^2*f*x + 2*I*a^2*b*c*d*
f + (2*I*a*b^2*d^2*f*x + 2*I*a*b^2*c*d*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b
^2))*dilog(-1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x + e)
 + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(2*(a^3 - a*b
```

```
^2)*d^2*e - 2*(a^3 - a*b^2)*c*d*f + 2*((a^2*b - b^3)*d^2*e - (a^2*b - b^3)*
c*d*f)*sin(f*x + e) + (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2 + (a
*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*sin(f*x + e))*sqrt(-(a^2 -
b^2)/b^2))*log(2*b*cos(f*x + e) + 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2
)/b^2) + 2*I*a) - 2*(2*(a^3 - a*b^2)*d^2*e - 2*(a^3 - a*b^2)*c*d*f + 2*((a^
2*b - b^3)*d^2*e - (a^2*b - b^3)*c*d*f)*sin(f*x + e) + (a^2*b*d^2*e^2 - 2*a
^2*b*c*d*e*f + a^2*b*c^2*f^2 + (a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2
*f^2)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(f*x + e) - 2*I*b*si
n(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(2*(a^3 - a*b^2)*d^2*e
 - 2*(a^3 - a*b^2)*c*d*f + 2*((a^2*b - b^3)*d^2*e - (a^2*b - b^3)*c*d*f)*si
n(f*x + e) - (a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2 + (a*b^2*d^2*
e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2)
)*log(-2*b*cos(f*x + e) + 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) +
 2*I*a) - 2*(2*(a^3 - a*b^2)*d^2*e - 2*(a^3 - a*b^2)*c*d*f + 2*((a^2*b - b^
3)*d^2*e - (a^2*b - b^3)*c*d*f)*sin(f*x + e) - (a^2*b*d^2*e^2 - 2*a^2*b*c*d
*e*f + a^2*b*c^2*f^2 + (a*b^2*d^2*e^2 - 2*a*b^2*c*d*e*f + a*b^2*c^2*f^2)*si
n(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(f*x + e) - 2*I*b*sin(f*x +
 e) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(2*(a^3 - a*b^2)*d^2*f*x + 2*
(a^3 - a*b^2)*d^2*e + 2*((a^2*b - b^3)*d^2*f*x + (a^2*b - b^3)*d^2*e)*sin(f
*x + e) - (a^2*b*d^2*f^2*x^2 + 2*a^2*b*c*d*f^2*x - a^2*b*d^2*e^2 + 2*a^2*b*
c*d*e*f + (a*b^2*d^2*f^2*x^2 + 2*a*b^2*c*d*f^2*x - a*b^2*d^2*e^2 + 2*a*b^2*
c*d*e*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(2*I*a*cos(f*x + e)
+ 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2
)/b^2) + 2*b)/b) + 2*(2*(a^3 - a*b^2)*d^2*f*x + 2*(a^3 - a*b^2)*d^2*e + 2*(
(a^2*b - b^3)*d^2*f*x + (a^2*b - b^3)*d^2*e)*sin(f*x + e) + (a^2*b*d^2*f^2*
x^2 + 2*a^2*b*c*d*f^2*x - a^2*b*d^2*e^2 + 2*a^2*b*c*d*e*f + (a*b^2*d^2*f^2*
x^2 + 2*a*b^2*c*d*f^2*x - a*b^2*d^2*e^2 + 2*a*b^2*c*d*e*f)*sin(f*x + e))*sq
rt(-(a^2 - b^2)/b^2))*log(1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b
*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(2*(
a^3 - a*b^2)*d^2*f*x + 2*(a^3 - a*b^2)*d^2*e + 2*((a^2*b - b^3)*d^2*f*x + (
a^2*b - b^3)*d^2*e)*sin(f*x + e) - (a^2*b*d^2*f^2*x^2 + 2*a^2*b*c*d*f^2*x -
 a^2*b*d^2*e^2 + 2*a^2*b*c*d*e*f + (a*b^2*d^2*f^2*x^2 + 2*a*b^2*c*d*f^2*x -
 a*b^2*d^2*e^2 + 2*a*b^2*c*d*e*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log
(1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I*b*sin(
f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(2*(a^3 - a*b^2)*d^2*f*x + 2
*(a^3 - a*b^2)*d^2*e + 2*((a^2*b - b^3)*d^2*f*x + (a^2*b - b^3)*d^2*e)*sin(
f*x + e) + (a^2*b*d^2*f^2*x^2 + 2*a^2*b*c*d*f^2*x - a^2*b*d^2*e^2 + 2*a^2*b
*c*d*e*f + (a*b^2*d^2*f^2*x^2 + 2*a*b^2*c*d*f^2*x - a*b^2*d^2*e^2 + 2*a*b^2
*c*d*e*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(-2*I*a*cos(f*x + e
) + 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b
^2)/b^2) + 2*b)/b))/((a^4*b - 2*a^2*b^3 + b^5)*f^3*sin(f*x + e) + (a^5 - 2*
a^3*b^2 + a*b^4)*f^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^2}{\left(b\sin\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^2/(b*sin(f*x + e) + a)^2, x)
```

maple [F] time = 2.33, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^2}{\left(a+b\sin\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2/(a+b*sin(f*x+e))^2,x)
```

```
[Out] int((d*x+c)^2/(a+b*sin(f*x+e))^2,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^2/(a+b*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^2/(a + b*sin(e + f*x))^2,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**2/(a+b*sin(f*x+e))**2,x)
```

```
[Out] Timed out
```

3.170 $\int \frac{c+dx}{(a+b\sin(e+fx))^2}\,dx$

Optimal. Leaf size=305

$$-\frac{ia(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f\left(a^2-b^2\right)^{3/2}}+\frac{ia(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)}{f\left(a^2-b^2\right)^{3/2}}+\frac{b(c+dx)\cos(e+fx)}{f\left(a^2-b^2\right)(a+b\sin(e+fx))}-\frac{ad\text{Li}_2\left(\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right.}{f^2\left(a^2-b^2\right)^{3/2}}$$

```
[Out] -d*ln(a+b*sin(f*x+e))/(a^2-b^2)/f^2-I*a*(d*x+c)*ln(1-I*b*exp(I*(f*x+e))/(a-
(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f+I*a*(d*x+c)*ln(1-I*b*exp(I*(f*x+e))/(a+
(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f-a*d*polylog(2,I*b*exp(I*(f*x+e))/(a-(a^
2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f^2+a*d*polylog(2,I*b*exp(I*(f*x+e))/(a+(a^2
-b^2)^(1/2)))/(a^2-b^2)^(3/2)/f^2+b*(d*x+c)*cos(f*x+e)/(a^2-b^2)/f/(a+b*sin
(f*x+e))
```

Rubi [A] time = 0.55, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {3324, 3323, 2264, 2190, 2279, 2391, 2668, 31}

$$-\frac{ad\text{PolyLog}\left(2,\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f^2\left(a^2-b^2\right)^{3/2}}+\frac{ad\text{PolyLog}\left(2,\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)}{f^2\left(a^2-b^2\right)^{3/2}}-\frac{ia(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{f\left(a^2-b^2\right)^{3/2}}+\frac{ia(c+dx)\log\left(1-\frac{ibe^{i(e+}}{\sqrt{a^2-b}}\right.}{f\left(a^2-b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)/(a + b*Sin[e + f*x])^2,x]
```

```
[Out] ((-I)*a*(c + d*x)*Log[1 - (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/((a
^2 - b^2)^(3/2)*f) + (I*a*(c + d*x)*Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt
[a^2 - b^2])])/((a^2 - b^2)^(3/2)*f) - (d*Log[a + b*Sin[e + f*x]])/((a^2 -
b^2)*f^2) - (a*d*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a - Sqrt[a^2 - b^2])])/(
(a^2 - b^2)^(3/2)*f^2) + (a*d*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^
2 - b^2])])/((a^2 - b^2)^(3/2)*f^2) + (b*(c + d*x)*Cos[e + f*x])/((a^2 - b^
2)*f*(a + b*Sin[e + f*x]))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
```

```
2, 0] && IGtQ[m, 0]
```

Rubi steps

$$\int \frac{c+dx}{(a+b\sin(e+fx))^2}\,dx = \frac{b(c+dx)\cos(e+fx)}{\left(a^2-b^2\right)f(a+b\sin(e+fx))}+\frac{a\int \frac{c+dx}{a+b\sin(e+fx)}\,dx}{a^2-b^2}-\frac{(bd)\int \frac{\cos(e+fx)}{a+b\sin(e+fx)}\,dx}{\left(a^2-b^2\right)f}$$
$$= \frac{b(c+dx)\cos(e+fx)}{\left(a^2-b^2\right)f(a+b\sin(e+fx))}+\frac{(2a)\int \frac{e^{i(e+fx)}(c+dx)}{ib+2ae^{i(e+fx)}-ibe^{2i(e+fx)}}\,dx}{a^2-b^2}-\frac{d\,\mathrm{Subst}\left(\int \frac{1}{a+x}\,dx,\right.}{\left(a^2-b\right.}$$
$$= -\frac{d\log(a+b\sin(e+fx))}{\left(a^2-b^2\right)f^2}+\frac{b(c+dx)\cos(e+fx)}{\left(a^2-b^2\right)f(a+b\sin(e+fx))}-\frac{(2iab)\int \frac{e^{i(e+fx)}(c+}{2a-2\sqrt{a^2-b^2}-2i}}{\left(a^2-b^2\right)^{3/2}}$$
$$= -\frac{ia(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f}+\frac{ia(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f}-\frac{d\log(a+b\sin(e}{\left(a^2-b^2\right)f}$$
$$= -\frac{ia(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f}+\frac{ia(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f}-\frac{d\log(a+b\sin(e}{\left(a^2-b^2\right)f}$$
$$= -\frac{ia(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f}+\frac{ia(c+dx)\log\left(1-\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}f}-\frac{d\log(a+b\sin(e}{\left(a^2-b^2\right)f}$$

Mathematica [A] time = 1.08, size = 236, normalized size = 0.77

$$\frac{\frac{a\left(-if(c+dx)\left(\log\left(1+\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)-\log\left(1-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}+a}\right)\right)-d\mathrm{Li}_2\left(-\frac{ibe^{i(e+fx)}}{\sqrt{a^2-b^2}-a}\right)+d\mathrm{Li}_2\left(\frac{ibe^{i(e+fx)}}{a+\sqrt{a^2-b^2}}\right)\right)}{\sqrt{a^2-b^2}}+\frac{bf(c+dx)\cos(e+fx)}{a+b\sin(e+fx)}-d\log(a+b\sin(e+f}{f^2\left(a^2-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)/(a + b*Sin[e + f*x])^2,x]

[Out] (-(d*Log[a + b*Sin[e + f*x]]) + (a*((-I)*f*(c + d*x)*(Log[1 + (I*b*E^(I*(e
+ f*x)))/(-a + Sqrt[a^2 - b^2])] - Log[1 - (I*b*E^(I*(e + f*x)))/(a + Sqrt[
a^2 - b^2])]) - d*PolyLog[2, ((-I)*b*E^(I*(e + f*x)))/(-a + Sqrt[a^2 - b^2]
)] + d*PolyLog[2, (I*b*E^(I*(e + f*x)))/(a + Sqrt[a^2 - b^2])]))/Sqrt[a^2 -
```

```
b^2] + (b*f*(c + d*x)*Cos[e + f*x])/(a + b*Sin[e + f*x]))/((a^2 - b^2)*f^2
)
```

fricas [B] time = 0.72, size = 1520, normalized size = 4.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/2*((I*a*b^2*d*sin(f*x + e) + I*a^2*b*d)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2
*(2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) - I*b*sin(f*x +
 e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-I*a*b^2*d*sin(f*x + e) - I*a^
2*b*d)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*x
+ e) - 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/
b + 1) + (-I*a*b^2*d*sin(f*x + e) - I*a^2*b*d)*sqrt(-(a^2 - b^2)/b^2)*dilog
(-1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I*b*sin
(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (I*a*b^2*d*sin(f*x + e) +
 I*a^2*b*d)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(f*x + e) + 2*a*si
n(f*x + e) - 2*(b*cos(f*x + e) + I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) +
 2*b)/b + 1) + (a^2*b*d*f*x + a^2*b*d*e + (a*b^2*d*f*x + a*b^2*d*e)*sin(f*x
 + e))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*x + e
) + 2*(b*cos(f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)
- (a^2*b*d*f*x + a^2*b*d*e + (a*b^2*d*f*x + a*b^2*d*e)*sin(f*x + e))*sqrt(-
(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(
f*x + e) - I*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (a^2*b*d*f*
x + a^2*b*d*e + (a*b^2*d*f*x + a*b^2*d*e)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b
^2)*log(1/2*(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) + 2*(b*cos(f*x + e) + I
*b*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - (a^2*b*d*f*x + a^2*b*d*
e + (a*b^2*d*f*x + a*b^2*d*e)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*
(-2*I*a*cos(f*x + e) + 2*a*sin(f*x + e) - 2*(b*cos(f*x + e) + I*b*sin(f*x +
 e))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*((a^2*b - b^3)*d*f*x + (a^2*b - b
^3)*c*f)*cos(f*x + e) - ((a^2*b - b^3)*d*sin(f*x + e) + (a^3 - a*b^2)*d + (
a^2*b*d*e - a^2*b*c*f + (a*b^2*d*e - a*b^2*c*f)*sin(f*x + e))*sqrt(-(a^2 -
b^2)/b^2))*log(2*b*cos(f*x + e) + 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2
)/b^2) + 2*I*a) - ((a^2*b - b^3)*d*sin(f*x + e) + (a^3 - a*b^2)*d + (a^2*b*
d*e - a^2*b*c*f + (a*b^2*d*e - a*b^2*c*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b
^2))*log(2*b*cos(f*x + e) - 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2)
 - 2*I*a) - ((a^2*b - b^3)*d*sin(f*x + e) + (a^3 - a*b^2)*d - (a^2*b*d*e -
a^2*b*c*f + (a*b^2*d*e - a*b^2*c*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*l
og(-2*b*cos(f*x + e) + 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*
I*a) - ((a^2*b - b^3)*d*sin(f*x + e) + (a^3 - a*b^2)*d - (a^2*b*d*e - a^2*b
*c*f + (a*b^2*d*e - a*b^2*c*f)*sin(f*x + e))*sqrt(-(a^2 - b^2)/b^2))*log(-2
*b*cos(f*x + e) - 2*I*b*sin(f*x + e) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a))
```

```
/((a^4*b - 2*a^2*b^3 + b^5)*f^2*sin(f*x + e) + (a^5 - 2*a^3*b^2 + a*b^4)*f^
2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{dx + c}{\left(b\sin\left(fx + e\right) + a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)/(b*sin(f*x + e) + a)^2, x)
```

maple [B] time = 1.24, size = 650, normalized size = 2.13

$$\frac{2\left(dx+c\right)\left(ib+a\,\mathrm{e}^{i\left(fx+e\right)}\right)}{f\left(a^2-b^2\right)\left(b\,\mathrm{e}^{2i\left(fx+e\right)}-b+2ia\,\mathrm{e}^{i\left(fx+e\right)}\right)}-\frac{2d\ln\left(\mathrm{e}^{i\left(fx+e\right)}\right)}{\left(-a^2+b^2\right)f^2}+\frac{d\ln\left(i\mathrm{e}^{2i\left(fx+e\right)}b-ib-2a\,\mathrm{e}^{i\left(fx+e\right)}\right)}{\left(-a^2+b^2\right)f^2}+\frac{ida\,\mathrm{dilog}\left(\frac{ia+b\,\mathrm{e}^{i(}}{ia}\right.}{\left(-a^2+b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(a+b*sin(f*x+e))^2,x)
```

```
[Out] 2*(d*x+c)*(I*b+a*exp(I*(f*x+e)))/f/(a^2-b^2)/(b*exp(2*I*(f*x+e))-b+2*I*a*ex
p(I*(f*x+e)))-2/(-a^2+b^2)/f^2*d*ln(exp(I*(f*x+e)))+1/(-a^2+b^2)/f^2*d*ln(I
*exp(2*I*(f*x+e))*b-I*b-2*a*exp(I*(f*x+e)))+I/(-a^2+b^2)^(3/2)/f^2*d*a*dilo
g((I*a+b*exp(I*(f*x+e))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))+1/(-a^2+b
^2)^(3/2)/f*d*a*ln((I*a+b*exp(I*(f*x+e))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^
(1/2)))*x+1/(-a^2+b^2)^(3/2)/f^2*d*a*ln((I*a+b*exp(I*(f*x+e))+(-a^2+b^2)^(1
/2))/(I*a+(-a^2+b^2)^(1/2)))*e+2*I/(-a^2+b^2)^(3/2)/f^2*a*d*e*arctan(1/2*(2
*I*b*exp(I*(f*x+e))-2*a)/(-a^2+b^2)^(1/2))-I/(-a^2+b^2)^(3/2)/f^2*d*a*dilog
((I*a+b*exp(I*(f*x+e))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-1/(-a^2+b^
2)^(3/2)/f*d*a*ln((I*a+b*exp(I*(f*x+e))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(
1/2)))*x-1/(-a^2+b^2)^(3/2)/f^2*d*a*ln((I*a+b*exp(I*(f*x+e))-(-a^2+b^2)^(1/
2))/(I*a-(-a^2+b^2)^(1/2)))*e-2*I/(-a^2+b^2)^(3/2)/f*a*c*arctan(1/2*(2*I*b*
exp(I*(f*x+e))-2*a)/(-a^2+b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)/(a + b*sin(e + f*x))^2,x)
```

```
[Out] \text{Hanged}
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)/(a+b*sin(f*x+e))**2,x)
```

```
[Out] Timed out
```

3.171 $\int \frac{1}{(c+dx)(a+b\sin(e+fx))^2}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c+dx)(a+b\sin(e+fx))^2},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)/(a+b*sin(f*x+e))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)(a+b\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)*(a + b*Sin[e + f*x])^2),x]
```

```
[Out] Defer[Int][1/((c + d*x)*(a + b*Sin[e + f*x])^2), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)(a+b\sin(e+fx))^2}\,dx = \int \frac{1}{(c+dx)(a+b\sin(e+fx))^2}\,dx$$

Mathematica [A] time = 37.82, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)(a+b\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)*(a + b*Sin[e + f*x])^2),x]
```

```
[Out] Integrate[1/((c + d*x)*(a + b*Sin[e + f*x])^2), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{\left(a^2+b^2\right)dx-\left(b^2dx+b^2c\right)\cos\left(fx+e\right)^2+\left(a^2+b^2\right)c+2\left(abdx+abc\right)\sin\left(fx+e\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral(1/((a^2 + b^2)*d*x - (b^2*d*x + b^2*c)*cos(f*x + e)^2 + (a^2 + b^2
)*c + 2*(a*b*d*x + a*b*c)*sin(f*x + e)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(b\sin\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate(1/((d*x + c)*(b*sin(f*x + e) + a)^2), x)
```

maple [A] time = 4.38, size = 0, normalized size = 0.00

$$\int \frac{1}{(dx+c)\left(a+b\sin\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)/(a+b*sin(f*x+e))^2,x)
```

```
[Out] int(1/(d*x+c)/(a+b*sin(f*x+e))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] (2*a*b*cos(2*f*x + 2*e)*cos(f*x + e) + 2*a*b*cos(f*x + e) - ((a^2*b^2 - b^4
)*d*f*x + (a^2*b^2 - b^4)*c*f + ((a^2*b^2 - b^4)*d*f*x + (a^2*b^2 - b^4)*c*
f)*cos(2*f*x + 2*e)^2 + 4*((a^4 - a^2*b^2)*d*f*x + (a^4 - a^2*b^2)*c*f)*cos
(f*x + e)^2 + 4*((a^3*b - a*b^3)*d*f*x + (a^3*b - a*b^3)*c*f)*cos(f*x + e)*
sin(2*f*x + 2*e) + ((a^2*b^2 - b^4)*d*f*x + (a^2*b^2 - b^4)*c*f)*sin(2*f*x
+ 2*e)^2 + 4*((a^4 - a^2*b^2)*d*f*x + (a^4 - a^2*b^2)*c*f)*sin(f*x + e)^2 -
 2*((a^2*b^2 - b^4)*d*f*x + (a^2*b^2 - b^4)*c*f + 2*((a^3*b - a*b^3)*d*f*x
+ (a^3*b - a*b^3)*c*f)*sin(f*x + e))*cos(2*f*x + 2*e) + 4*((a^3*b - a*b^3)*
d*f*x + (a^3*b - a*b^3)*c*f)*sin(f*x + e))*integrate(-2*(a*b*d*cos(f*x + e)
 + 2*(a^2*d*f*x + a^2*c*f)*cos(f*x + e)^2 + 2*(a^2*d*f*x + a^2*c*f)*sin(f*x
 + e)^2 + (a*b*d*cos(f*x + e) - (a*b*d*f*x + a*b*c*f)*sin(f*x + e))*cos(2*f
*x + 2*e) + (a*b*d*sin(f*x + e) + b^2*d + (a*b*d*f*x + a*b*c*f)*cos(f*x + e
```

```
))*sin(2*f*x + 2*e) + (a*b*d*f*x + a*b*c*f)*sin(f*x + e))/((a^2*b^2 - b^4)*
d^2*f*x^2 + 2*(a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)*c^2*f + ((a^2*b^2 -
 b^4)*d^2*f*x^2 + 2*(a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)*c^2*f)*cos(2*
f*x + 2*e)^2 + 4*((a^4 - a^2*b^2)*d^2*f*x^2 + 2*(a^4 - a^2*b^2)*c*d*f*x + (
a^4 - a^2*b^2)*c^2*f)*cos(f*x + e)^2 + 4*((a^3*b - a*b^3)*d^2*f*x^2 + 2*(a^
3*b - a*b^3)*c*d*f*x + (a^3*b - a*b^3)*c^2*f)*cos(f*x + e)*sin(2*f*x + 2*e)
 + ((a^2*b^2 - b^4)*d^2*f*x^2 + 2*(a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)
*c^2*f)*sin(2*f*x + 2*e)^2 + 4*((a^4 - a^2*b^2)*d^2*f*x^2 + 2*(a^4 - a^2*b^
2)*c*d*f*x + (a^4 - a^2*b^2)*c^2*f)*sin(f*x + e)^2 - 2*((a^2*b^2 - b^4)*d^2
*f*x^2 + 2*(a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)*c^2*f + 2*((a^3*b - a*
b^3)*d^2*f*x^2 + 2*(a^3*b - a*b^3)*c*d*f*x + (a^3*b - a*b^3)*c^2*f)*sin(f*x
 + e))*cos(2*f*x + 2*e) + 4*((a^3*b - a*b^3)*d^2*f*x^2 + 2*(a^3*b - a*b^3)*
c*d*f*x + (a^3*b - a*b^3)*c^2*f)*sin(f*x + e)), x) + 2*(a*b*sin(f*x + e) +
b^2)*sin(2*f*x + 2*e))/((a^2*b^2 - b^4)*d*f*x + (a^2*b^2 - b^4)*c*f + ((a^2
*b^2 - b^4)*d*f*x + (a^2*b^2 - b^4)*c*f)*cos(2*f*x + 2*e)^2 + 4*((a^4 - a^2
*b^2)*d*f*x + (a^4 - a^2*b^2)*c*f)*cos(f*x + e)^2 + 4*((a^3*b - a*b^3)*d*f*
x + (a^3*b - a*b^3)*c*f)*cos(f*x + e)*sin(2*f*x + 2*e) + ((a^2*b^2 - b^4)*d
*f*x + (a^2*b^2 - b^4)*c*f)*sin(2*f*x + 2*e)^2 + 4*((a^4 - a^2*b^2)*d*f*x +
 (a^4 - a^2*b^2)*c*f)*sin(f*x + e)^2 - 2*((a^2*b^2 - b^4)*d*f*x + (a^2*b^2
- b^4)*c*f + 2*((a^3*b - a*b^3)*d*f*x + (a^3*b - a*b^3)*c*f)*sin(f*x + e))*
cos(2*f*x + 2*e) + 4*((a^3*b - a*b^3)*d*f*x + (a^3*b - a*b^3)*c*f)*sin(f*x
+ e))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\,\sin\left(e+f\,x\right)\right)^2\,\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*sin(e + f*x))^2*(c + d*x)),x)
```

```
[Out] int(1/((a + b*sin(e + f*x))^2*(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)/(a+b*sin(f*x+e))**2,x)
```

```
[Out] Timed out
```

3.172 $\int \frac{1}{(c+dx)^2(a+b\sin(e+fx))^2}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{1}{(c+dx)^2(a+b\sin(e+fx))^2},x\right)$$

```
[Out] Unintegrable(1/(d*x+c)^2/(a+b*sin(f*x+e))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(c+dx)^2(a+b\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((c + d*x)^2*(a + b*Sin[e + f*x])^2),x]
```

```
[Out] Defer[Int][1/((c + d*x)^2*(a + b*Sin[e + f*x])^2), x]
```

Rubi steps

$$\int \frac{1}{(c+dx)^2(a+b\sin(e+fx))^2}\,dx = \int \frac{1}{(c+dx)^2(a+b\sin(e+fx))^2}\,dx$$

Mathematica [A] time = 109.51, size = 0, normalized size = 0.00

$$\int \frac{1}{(c+dx)^2(a+b\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((c + d*x)^2*(a + b*Sin[e + f*x])^2),x]
```

```
[Out] Integrate[1/((c + d*x)^2*(a + b*Sin[e + f*x])^2), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{1}{(a^2+b^2)d^2x^2+2\left(a^2+b^2\right)cdx+\left(a^2+b^2\right)c^2-\left(b^2d^2x^2+2\,b^2cdx+b^2c^2\right)\cos\left(fx+e\right)^2+2\left(abd^2x^2+2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral(1/((a^2 + b^2)*d^2*x^2 + 2*(a^2 + b^2)*c*d*x + (a^2 + b^2)*c^2 - (
b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*cos(f*x + e)^2 + 2*(a*b*d^2*x^2 + 2*a*
b*c*d*x + a*b*c^2)*sin(f*x + e)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 8.14, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(dx+c\right)^{2} \left(a+b\sin\left(fx+e\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^2/(a+b*sin(f*x+e))^2,x)
```

```
[Out] int(1/(d*x+c)^2/(a+b*sin(f*x+e))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)^2/(a+b*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] (2*a*b*cos(2*f*x + 2*e)*cos(f*x + e) + 2*a*b*cos(f*x + e) - ((a^2*b^2 - b^4
)*d^2*f*x^2 + 2*(a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)*c^2*f + ((a^2*b^2
 - b^4)*d^2*f*x^2 + 2*(a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)*c^2*f)*cos(
2*f*x + 2*e)^2 + 4*((a^4 - a^2*b^2)*d^2*f*x^2 + 2*(a^4 - a^2*b^2)*c*d*f*x +
 (a^4 - a^2*b^2)*c^2*f)*cos(f*x + e)^2 + 4*((a^3*b - a*b^3)*d^2*f*x^2 + 2*(
a^3*b - a*b^3)*c*d*f*x + (a^3*b - a*b^3)*c^2*f)*cos(f*x + e)*sin(2*f*x + 2*
e) + ((a^2*b^2 - b^4)*d^2*f*x^2 + 2*(a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^
4)*c^2*f)*sin(2*f*x + 2*e)^2 + 4*((a^4 - a^2*b^2)*d^2*f*x^2 + 2*(a^4 - a^2*
b^2)*c*d*f*x + (a^4 - a^2*b^2)*c^2*f)*sin(f*x + e)^2 - 2*((a^2*b^2 - b^4)*d
^2*f*x^2 + 2*(a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)*c^2*f + 2*((a^3*b -
a*b^3)*d^2*f*x^2 + 2*(a^3*b - a*b^3)*c*d*f*x + (a^3*b - a*b^3)*c^2*f)*sin(f
*x + e))*cos(2*f*x + 2*e) + 4*((a^3*b - a*b^3)*d^2*f*x^2 + 2*(a^3*b - a*b^3
```

```
)*c*d*f*x + (a^3*b - a*b^3)*c^2*f)*sin(f*x + e))*integrate(-2*(2*a*b*d*cos(
f*x + e) + 2*(a^2*d*f*x + a^2*c*f)*cos(f*x + e)^2 + 2*(a^2*d*f*x + a^2*c*f)
*sin(f*x + e)^2 + (2*a*b*d*cos(f*x + e) - (a*b*d*f*x + a*b*c*f)*sin(f*x + e
))*cos(2*f*x + 2*e) + (2*a*b*d*sin(f*x + e) + 2*b^2*d + (a*b*d*f*x + a*b*c*
f)*cos(f*x + e))*sin(2*f*x + 2*e) + (a*b*d*f*x + a*b*c*f)*sin(f*x + e))/((a
^2*b^2 - b^4)*d^3*f*x^3 + 3*(a^2*b^2 - b^4)*c*d^2*f*x^2 + 3*(a^2*b^2 - b^4)
*c^2*d*f*x + (a^2*b^2 - b^4)*c^3*f + ((a^2*b^2 - b^4)*d^3*f*x^3 + 3*(a^2*b^
2 - b^4)*c*d^2*f*x^2 + 3*(a^2*b^2 - b^4)*c^2*d*f*x + (a^2*b^2 - b^4)*c^3*f)
*cos(2*f*x + 2*e)^2 + 4*((a^4 - a^2*b^2)*d^3*f*x^3 + 3*(a^4 - a^2*b^2)*c*d^
2*f*x^2 + 3*(a^4 - a^2*b^2)*c^2*d*f*x + (a^4 - a^2*b^2)*c^3*f)*cos(f*x + e)
^2 + 4*((a^3*b - a*b^3)*d^3*f*x^3 + 3*(a^3*b - a*b^3)*c*d^2*f*x^2 + 3*(a^3*
b - a*b^3)*c^2*d*f*x + (a^3*b - a*b^3)*c^3*f)*cos(f*x + e)*sin(2*f*x + 2*e)
 + ((a^2*b^2 - b^4)*d^3*f*x^3 + 3*(a^2*b^2 - b^4)*c*d^2*f*x^2 + 3*(a^2*b^2
- b^4)*c^2*d*f*x + (a^2*b^2 - b^4)*c^3*f)*sin(2*f*x + 2*e)^2 + 4*((a^4 - a^
2*b^2)*d^3*f*x^3 + 3*(a^4 - a^2*b^2)*c*d^2*f*x^2 + 3*(a^4 - a^2*b^2)*c^2*d*
f*x + (a^4 - a^2*b^2)*c^3*f)*sin(f*x + e)^2 - 2*((a^2*b^2 - b^4)*d^3*f*x^3
+ 3*(a^2*b^2 - b^4)*c*d^2*f*x^2 + 3*(a^2*b^2 - b^4)*c^2*d*f*x + (a^2*b^2 -
b^4)*c^3*f + 2*((a^3*b - a*b^3)*d^3*f*x^3 + 3*(a^3*b - a*b^3)*c*d^2*f*x^2 +
 3*(a^3*b - a*b^3)*c^2*d*f*x + (a^3*b - a*b^3)*c^3*f)*sin(f*x + e))*cos(2*f
*x + 2*e) + 4*((a^3*b - a*b^3)*d^3*f*x^3 + 3*(a^3*b - a*b^3)*c*d^2*f*x^2 +
3*(a^3*b - a*b^3)*c^2*d*f*x + (a^3*b - a*b^3)*c^3*f)*sin(f*x + e)), x) + 2*
(a*b*sin(f*x + e) + b^2)*sin(2*f*x + 2*e))/((a^2*b^2 - b^4)*d^2*f*x^2 + 2*(
a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)*c^2*f + ((a^2*b^2 - b^4)*d^2*f*x^2
 + 2*(a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)*c^2*f)*cos(2*f*x + 2*e)^2 +
4*((a^4 - a^2*b^2)*d^2*f*x^2 + 2*(a^4 - a^2*b^2)*c*d*f*x + (a^4 - a^2*b^2)*
c^2*f)*cos(f*x + e)^2 + 4*((a^3*b - a*b^3)*d^2*f*x^2 + 2*(a^3*b - a*b^3)*c*
d*f*x + (a^3*b - a*b^3)*c^2*f)*cos(f*x + e)*sin(2*f*x + 2*e) + ((a^2*b^2 -
b^4)*d^2*f*x^2 + 2*(a^2*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)*c^2*f)*sin(2*f
*x + 2*e)^2 + 4*((a^4 - a^2*b^2)*d^2*f*x^2 + 2*(a^4 - a^2*b^2)*c*d*f*x + (a
^4 - a^2*b^2)*c^2*f)*sin(f*x + e)^2 - 2*((a^2*b^2 - b^4)*d^2*f*x^2 + 2*(a^2
*b^2 - b^4)*c*d*f*x + (a^2*b^2 - b^4)*c^2*f + 2*((a^3*b - a*b^3)*d^2*f*x^2
+ 2*(a^3*b - a*b^3)*c*d*f*x + (a^3*b - a*b^3)*c^2*f)*sin(f*x + e))*cos(2*f*
x + 2*e) + 4*((a^3*b - a*b^3)*d^2*f*x^2 + 2*(a^3*b - a*b^3)*c*d*f*x + (a^3*
b - a*b^3)*c^2*f)*sin(f*x + e))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{1}{\left(a+b\sin\left(e+fx\right)\right)^2\left(c+dx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + b*sin(e + f*x))^2*(c + d*x)^2),x)
```

```
[Out] int(1/((a + b*sin(e + f*x))^2*(c + d*x)^2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(d*x+c)**2/(a+b*sin(f*x+e))**2,x)
```

```
[Out] Timed out
```

3.173 $\int (c+dx)^m (a+b\sin(e+fx))^n \, dx$

Optimal. Leaf size=23

$$\text{Int}\left((c+dx)^m(a+b\sin(e+fx))^n, x\right)$$

```
[Out] Unintegrable((d*x+c)^m*(a+b*sin(f*x+e))^n,x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (c+dx)^m(a+b\sin(e+fx))^n \, dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m*(a + b*Sin[e + f*x])^n,x]
```

```
[Out] Defer[Int][(c + d*x)^m*(a + b*Sin[e + f*x])^n, x]
```

Rubi steps

$$\int (c+dx)^m(a+b\sin(e+fx))^n \, dx = \int (c+dx)^m(a+b\sin(e+fx))^n \, dx$$

Mathematica [A] time = 1.08, size = 0, normalized size = 0.00

$$\int (c+dx)^m(a+b\sin(e+fx))^n \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m*(a + b*Sin[e + f*x])^n,x]
```

```
[Out] Integrate[(c + d*x)^m*(a + b*Sin[e + f*x])^n, x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left((dx+c)^m\left(b\sin\left(fx+e\right)+a\right)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e))^n,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^m*(b*sin(f*x + e) + a)^n, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(b\sin\left(fx+e\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e))^n,x, algorithm="giac")
[Out] integrate((d*x + c)^m*(b*sin(f*x + e) + a)^n, x)
```

maple [A] time = 0.40, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(a+b\sin\left(fx+e\right)\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+b*sin(f*x+e))^n,x)
[Out] int((d*x+c)^m*(a+b*sin(f*x+e))^n,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (dx+c)^m \left(b\sin\left(fx+e\right)+a\right)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e))^n,x, algorithm="maxima")
[Out] integrate((d*x + c)^m*(b*sin(f*x + e) + a)^n, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int {\left(a+b\,\sin\left(e+f\,x\right)\right)}^n\,{\left(c+d\,x\right)}^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))^n*(c + d*x)^m,x)
[Out] int((a + b*sin(e + f*x))^n*(c + d*x)^m, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+b*sin(f*x+e))**n,x)
[Out] Timed out
```

3.174 $\int (c+dx)^m (a+b\sin(e+fx))^3 \, dx$

Optimal. Leaf size=607

$$\frac{a^3(c+dx)^{m+1}}{d(m+1)}-\frac{3a^2be^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right)}{2f}-\frac{3a^2be^{-i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+\right.}{2f}$$

```
[Out] a^3*(d*x+c)^(1+m)/d/(1+m)+3/2*a*b^2*(d*x+c)^(1+m)/d/(1+m)-3/2*a^2*b*exp(I*(
e-c*f/d))*(d*x+c)^m*GAMMA(1+m,-I*f*(d*x+c)/d)/f/((-I*f*(d*x+c)/d)^m)-3/8*b^
3*exp(I*(e-c*f/d))*(d*x+c)^m*GAMMA(1+m,-I*f*(d*x+c)/d)/f/((-I*f*(d*x+c)/d)^
m)-3/2*a^2*b*(d*x+c)^m*GAMMA(1+m,I*f*(d*x+c)/d)/exp(I*(e-c*f/d))/f/((I*f*(d
*x+c)/d)^m)-3/8*b^3*(d*x+c)^m*GAMMA(1+m,I*f*(d*x+c)/d)/exp(I*(e-c*f/d))/f/(
(I*f*(d*x+c)/d)^m)+3*I*2^(-3-m)*a*b^2*exp(2*I*(e-c*f/d))*(d*x+c)^m*GAMMA(1+
m,-2*I*f*(d*x+c)/d)/f/((-I*f*(d*x+c)/d)^m)-3*I*2^(-3-m)*a*b^2*(d*x+c)^m*GAM
MA(1+m,2*I*f*(d*x+c)/d)/exp(2*I*(e-c*f/d))/f/((I*f*(d*x+c)/d)^m)+1/8*3^(-1-
m)*b^3*exp(3*I*(e-c*f/d))*(d*x+c)^m*GAMMA(1+m,-3*I*f*(d*x+c)/d)/f/((-I*f*(d
*x+c)/d)^m)+1/8*3^(-1-m)*b^3*(d*x+c)^m*GAMMA(1+m,3*I*f*(d*x+c)/d)/exp(3*I*(
e-c*f/d))/f/((I*f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.76, antiderivative size = 607, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {3317, 3308, 2181, 3312, 3307}

$$-\frac{3a^2be^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{if(c+dx)}{d}\right)}{2f}-\frac{3a^2be^{-i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(\frac{if(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m\right.}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + b*Sin[e + f*x])^3,x]
```

```
[Out] (a^3*(c + d*x)^(1 + m))/(d*(1 + m)) + (3*a*b^2*(c + d*x)^(1 + m))/(2*d*(1 +
 m)) - (3*a^2*b*E^(I*(e - (c*f)/d))*(c + d*x)^m*Gamma[1 + m, ((-I)*f*(c + d
*x))/d])/(2*f*(((-I)*f*(c + d*x))/d)^m) - (3*b^3*E^(I*(e - (c*f)/d))*(c + d
*x)^m*Gamma[1 + m, ((-I)*f*(c + d*x))/d])/(8*f*(((-I)*f*(c + d*x))/d)^m) -
(3*a^2*b*(c + d*x)^m*Gamma[1 + m, (I*f*(c + d*x))/d])/(2*E^(I*(e - (c*f)/d)
)*f*((I*f*(c + d*x))/d)^m) - (3*b^3*(c + d*x)^m*Gamma[1 + m, (I*f*(c + d*x)
)/d])/(8*E^(I*(e - (c*f)/d))*f*((I*f*(c + d*x))/d)^m) + ((3*I)*2^(-3 - m)*a
*b^2*E^((2*I)*(e - (c*f)/d))*(c + d*x)^m*Gamma[1 + m, ((-2*I)*f*(c + d*x))/
d])/(f*(((-I)*f*(c + d*x))/d)^m) - ((3*I)*2^(-3 - m)*a*b^2*(c + d*x)^m*Gamm
a[1 + m, ((2*I)*f*(c + d*x))/d])/(E^((2*I)*(e - (c*f)/d))*f*((I*f*(c + d*x)
)/d)^m) + (3^(-1 - m)*b^3*E^((3*I)*(e - (c*f)/d))*(c + d*x)^m*Gamma[1 + m,
((-3*I)*f*(c + d*x))/d])/(8*f*(((-I)*f*(c + d*x))/d)^m) + (3^(-1 - m)*b^3*(
```

```
c + d*x)^m*Gamma[1 + m, ((3*I)*f*(c + d*x))/d])/(8*E^((3*I)*(e - (c*f)/d))*
f*((I*f*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^m (a+b\sin(e+fx))^3\,dx = \int \left(a^3(c+dx)^m + 3a^2b(c+dx)^m\sin(e+fx) + 3ab^2(c+dx)^m\sin^2(e+fx) +$$

$$= \frac{a^3(c+dx)^{1+m}}{d(1+m)} + \left(3a^2b\right)\int (c+dx)^m\sin(e+fx)\,dx + \left(3ab^2\right)\int (c+dx)^m \sin$$

$$= \frac{a^3(c+dx)^{1+m}}{d(1+m)} + \frac{1}{2}\left(3ia^2b\right)\int e^{-i(e+fx)}(c+dx)^m\,dx - \frac{1}{2}\left(3ia^2b\right)\int e^{i(e+fx)}(c+$$

$$= \frac{a^3(c+dx)^{1+m}}{d(1+m)} + \frac{3ab^2(c+dx)^{1+m}}{2d(1+m)} - \frac{3a^2be^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(1\right.}{2f}$$

$$= \frac{a^3(c+dx)^{1+m}}{d(1+m)} + \frac{3ab^2(c+dx)^{1+m}}{2d(1+m)} - \frac{3a^2be^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(1\right.}{2f}$$

$$= \frac{a^3(c+dx)^{1+m}}{d(1+m)} + \frac{3ab^2(c+dx)^{1+m}}{2d(1+m)} - \frac{3a^2be^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(1\right.}{2f}$$

Mathematica [A] time = 6.18, size = 415, normalized size = 0.68

$$\frac{i(c+dx)^m\left(9ib\left(4a^2+b^2\right)e^{i\left(e-\frac{cf}{d}\right)}\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right) + 9ib\left(4a^2+b^2\right)e^{-i\left(e-\frac{cf}{d}\right)}\left(\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + b*Sin[e + f*x])^3,x]
```

```
[Out] ((I/24)*(c + d*x)^m*(((-12*I)*a*(2*a^2 + 3*b^2)*f*(c + d*x))/(d*(1 + m)) +
((9*I)*b*(4*a^2 + b^2)*E^(I*(e - (c*f)/d))*Gamma[1 + m, ((-I)*f*(c + d*x))/
d])/(((-I)*f*(c + d*x))/d)^m + ((9*I)*b*(4*a^2 + b^2)*Gamma[1 + m, (I*f*(c
+ d*x))/d])/(E^(I*(e - (c*f)/d))*((I*f*(c + d*x))/d)^m) + (9*a*b^2*E^((2*I)
*(e - (c*f)/d))*Gamma[1 + m, ((-2*I)*f*(c + d*x))/d])/(2^m*(((-I)*f*(c + d*
x))/d)^m) - (9*a*b^2*Gamma[1 + m, ((2*I)*f*(c + d*x))/d])/(2^m*E^((2*I)*(e
- (c*f)/d))*((I*f*(c + d*x))/d)^m) - (I*b^3*E^((3*I)*(e - (c*f)/d))*Gamma[1
 + m, ((-3*I)*f*(c + d*x))/d])/(3^m*(((-I)*f*(c + d*x))/d)^m) - (I*b^3*Gamm
a[1 + m, ((3*I)*f*(c + d*x))/d])/(3^m*E^((3*I)*(e - (c*f)/d))*((I*f*(c + d*
x))/d)^m)))/f
```

fricas [A] time = 0.50, size = 428, normalized size = 0.71

$$\frac{\left(b^3dm+b^3d\right)e^{\left(-\frac{dm\log\left(\frac{3if}{d}\right)+3ide-3icf}{d}\right)}\Gamma\left(m+1,\frac{3idfx+3icf}{d}\right)+\left(-9iab^2dm-9iab^2d\right)e^{\left(-\frac{dm\log\left(\frac{2if}{d}\right)+2ide-2icf}{d}\right)}\Gamma\left(m+1,\frac{2i\cdots}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e))^3,x, algorithm="fricas")
```

```
[Out] 1/24*((b^3*d*m + b^3*d)*e^(-(d*m*log(3*I*f/d) + 3*I*d*e - 3*I*c*f)/d)*gamma
(m + 1, (3*I*d*f*x + 3*I*c*f)/d) + (-9*I*a*b^2*d*m - 9*I*a*b^2*d)*e^(-(d*m*
log(2*I*f/d) + 2*I*d*e - 2*I*c*f)/d)*gamma(m + 1, (2*I*d*f*x + 2*I*c*f)/d)
- 9*((4*a^2*b + b^3)*d*m + (4*a^2*b + b^3)*d)*e^(-(d*m*log(I*f/d) + I*d*e -
 I*c*f)/d)*gamma(m + 1, (I*d*f*x + I*c*f)/d) - 9*((4*a^2*b + b^3)*d*m + (4*
a^2*b + b^3)*d)*e^(-(d*m*log(-I*f/d) - I*d*e + I*c*f)/d)*gamma(m + 1, (-I*d
*f*x - I*c*f)/d) + (9*I*a*b^2*d*m + 9*I*a*b^2*d)*e^(-(d*m*log(-2*I*f/d) - 2
*I*d*e + 2*I*c*f)/d)*gamma(m + 1, (-2*I*d*f*x - 2*I*c*f)/d) + (b^3*d*m + b^
3*d)*e^(-(d*m*log(-3*I*f/d) - 3*I*d*e + 3*I*c*f)/d)*gamma(m + 1, (-3*I*d*f*
x - 3*I*c*f)/d) + 12*((2*a^3 + 3*a*b^2)*d*f*x + (2*a^3 + 3*a*b^2)*c*f)*(d*x
 + c)^m)/(d*f*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\sin\left(fx+e\right)+a\right)^3(dx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e))^3,x, algorithm="giac")
```

```
[Out] integrate((b*sin(f*x + e) + a)^3*(d*x + c)^m, x)
```

maple [F] time = 0.44, size = 0, normalized size = 0.00

$$\int(dx+c)^m\left(a+b\sin\left(fx+e\right)\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+b*sin(f*x+e))^3,x)
```

```
[Out] int((d*x+c)^m*(a+b*sin(f*x+e))^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{(dx+c)^{m+1}a^3}{d(m+1)}+\frac{6\,ab^2e^{\left(m\log(dx+c)+\log(dx+c)\right)}-6\left(ab^2dm+ab^2d\right)\int(dx+c)^m\cos\left(2\,fx+2\,e\right)\,dx-\left(b^3dm+b^3d\right)\int\cdots}{4\left(dm\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e))^3,x, algorithm="maxima")
```

```
[Out] (d*x + c)^(m + 1)*a^3/(d*(m + 1)) + 1/4*(6*a*b^2*e^(m*log(d*x + c) + log(d*
x + c)) - 6*(a*b^2*d*m + a*b^2*d)*integrate((d*x + c)^m*cos(2*f*x + 2*e), x
) - (b^3*d*m + b^3*d)*integrate((d*x + c)^m*sin(3*f*x + 3*e), x) + 3*((4*a^
2*b + b^3)*d*m + (4*a^2*b + b^3)*d)*integrate((d*x + c)^m*sin(f*x + e), x))
/(d*m + d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(a+b\,\sin\left(e+f\,x\right)\right)^3\,{\left(c+d\,x\right)}^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))^3*(c + d*x)^m,x)
```

```
[Out] int((a + b*sin(e + f*x))^3*(c + d*x)^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\sin\left(e+fx\right)\right)^3 \left(c+dx\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+b*sin(f*x+e))**3,x)
```

```
[Out] Integral((a + b*sin(e + f*x))**3*(c + d*x)**m, x)
```

3.175 $\int (c+dx)^m(a+b\sin(e+fx))^2\,dx$

Optimal. Leaf size=318

$$\frac{a^2(c+dx)^{m+1}}{d(m+1)} - \frac{abe^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right)}{f} - \frac{abe^{-i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1\right.}{f}$$

```
[Out] a^2*(d*x+c)^(1+m)/d/(1+m)+1/2*b^2*(d*x+c)^(1+m)/d/(1+m)-a*b*exp(I*(e-c*f/d)
)*(d*x+c)^m*GAMMA(1+m,-I*f*(d*x+c)/d)/f/((-I*f*(d*x+c)/d)^m)-a*b*(d*x+c)^m*
GAMMA(1+m,I*f*(d*x+c)/d)/exp(I*(e-c*f/d))/f/((I*f*(d*x+c)/d)^m)+I*2^(-3-m)*
b^2*exp(2*I*(e-c*f/d))*(d*x+c)^m*GAMMA(1+m,-2*I*f*(d*x+c)/d)/f/((-I*f*(d*x+
c)/d)^m)-I*2^(-3-m)*b^2*(d*x+c)^m*GAMMA(1+m,2*I*f*(d*x+c)/d)/exp(2*I*(e-c*f
/d))/f/((I*f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.39, antiderivative size = 318, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {3317, 3308, 2181, 3312, 3307}

$$-\frac{abe^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{if(c+dx)}{d}\right)}{f} - \frac{abe^{-i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(\frac{if(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1\right.}{f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + b*Sin[e + f*x])^2,x]
```

```
[Out] (a^2*(c + d*x)^(1 + m))/(d*(1 + m)) + (b^2*(c + d*x)^(1 + m))/(2*d*(1 + m))
 - (a*b*E^(I*(e - (c*f)/d))*(c + d*x)^m*Gamma[1 + m, ((-I)*f*(c + d*x))/d])
/(f*(((-I)*f*(c + d*x))/d)^m) - (a*b*(c + d*x)^m*Gamma[1 + m, (I*f*(c + d*x
))/d])/(E^(I*(e - (c*f)/d))*f*((I*f*(c + d*x))/d)^m) + (I*2^(-3 - m)*b^2*E^
((2*I)*(e - (c*f)/d))*(c + d*x)^m*Gamma[1 + m, ((-2*I)*f*(c + d*x))/d])/(f*
(((-I)*f*(c + d*x))/d)^m) - (I*2^(-3 - m)*b^2*(c + d*x)^m*Gamma[1 + m, ((2*
I)*f*(c + d*x))/d])/(E^((2*I)*(e - (c*f)/d))*f*((I*f*(c + d*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)]])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\int (c+dx)^m (a+b\sin(e+fx))^2\,dx = \int \left(a^2(c+dx)^m + 2ab(c+dx)^m \sin(e+fx) + b^2(c+dx)^m \sin^2(e+fx)\right) dx$$
$$= \frac{a^2(c+dx)^{1+m}}{d(1+m)} + (2ab)\int (c+dx)^m \sin(e+fx)\,dx + b^2 \int (c+dx)^m \sin^2(e$$
$$= \frac{a^2(c+dx)^{1+m}}{d(1+m)} + (iab)\int e^{-i(e+fx)}(c+dx)^m\,dx - (iab)\int e^{i(e+fx)}(c+dx)^m\,d$$
$$= \frac{a^2(c+dx)^{1+m}}{d(1+m)} + \frac{b^2(c+dx)^{1+m}}{2d(1+m)} - \frac{abe^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m \left(-\frac{if(c+dx)}{d}\right)^{-m} \Gamma\left(1+\right.}{f}$$
$$= \frac{a^2(c+dx)^{1+m}}{d(1+m)} + \frac{b^2(c+dx)^{1+m}}{2d(1+m)} - \frac{abe^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m \left(-\frac{if(c+dx)}{d}\right)^{-m} \Gamma\left(1+\right.}{f}$$
$$= \frac{a^2(c+dx)^{1+m}}{d(1+m)} + \frac{b^2(c+dx)^{1+m}}{2d(1+m)} - \frac{abe^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m \left(-\frac{if(c+dx)}{d}\right)^{-m} \Gamma\left(1+\right.}{f}$$

Mathematica [A] time = 4.15, size = 268, normalized size = 0.84

$$-\frac{(c+dx)^m \left(-\frac{4f(2a^2+b^2)(c+dx)}{d(m+1)} + 8abe^{i\left(e-\frac{cf}{d}\right)}\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right) + 8abe^{-i\left(e-\frac{cf}{d}\right)}\left(\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\right.\right.}{8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + b*Sin[e + f*x])^2,x]
```

```
[Out] -1/8*((c + d*x)^m*((-4*(2*a^2 + b^2)*f*(c + d*x))/(d*(1 + m)) + (8*a*b*E^(I
*(e - (c*f)/d))*Gamma[1 + m, ((-I)*f*(c + d*x))/d])/(((-I)*f*(c + d*x))/d)^
m + (8*a*b*Gamma[1 + m, (I*f*(c + d*x))/d])/(E^(I*(e - (c*f)/d))*((I*f*(c +
 d*x))/d)^m) - (I*b^2*E^((2*I)*(e - (c*f)/d))*Gamma[1 + m, ((-2*I)*f*(c + d
*x))/d])/(2^m*(((-I)*f*(c + d*x))/d)^m) + (I*b^2*Gamma[1 + m, ((2*I)*f*(c +
 d*x))/d])/(2^m*E^((2*I)*(e - (c*f)/d))*((I*f*(c + d*x))/d)^m)))/f
```

fricas [A] time = 0.49, size = 274, normalized size = 0.86

$$\frac{\left(-i\,b^2dm - i\,b^2d\right)e^{\left(-\frac{dm\log\left(\frac{2if}{d}\right)+2ide-2icf}{d}\right)}\Gamma\left(m+1,\frac{2idfx+2icf}{d}\right) - 8\,(abdm+abd)e^{\left(-\frac{dm\log\left(\frac{if}{d}\right)+ide-icf}{d}\right)}\Gamma\left(m+1,\frac{idfx+icf}{d}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] 1/8*((-I*b^2*d*m - I*b^2*d)*e^(-(d*m*log(2*I*f/d) + 2*I*d*e - 2*I*c*f)/d)*g
amma(m + 1, (2*I*d*f*x + 2*I*c*f)/d) - 8*(a*b*d*m + a*b*d)*e^(-(d*m*log(I*f
/d) + I*d*e - I*c*f)/d)*gamma(m + 1, (I*d*f*x + I*c*f)/d) - 8*(a*b*d*m + a*
b*d)*e^(-(d*m*log(-I*f/d) - I*d*e + I*c*f)/d)*gamma(m + 1, (-I*d*f*x - I*c*
f)/d) + (I*b^2*d*m + I*b^2*d)*e^(-(d*m*log(-2*I*f/d) - 2*I*d*e + 2*I*c*f)/d
)*gamma(m + 1, (-2*I*d*f*x - 2*I*c*f)/d) + 4*((2*a^2 + b^2)*d*f*x + (2*a^2
+ b^2)*c*f)*(d*x + c)^m)/(d*f*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b \sin \left(fx + e\right) + a\right)^{2} (dx + c)^{m} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((b*sin(f*x + e) + a)^2*(d*x + c)^m, x)
```

maple [F] time = 0.38, size = 0, normalized size = 0.00

$$\int (dx + c)^{m} \left(a + b \sin \left(fx + e\right)\right)^{2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+b*sin(f*x+e))^2,x)
```

```
[Out] int((d*x+c)^m*(a+b*sin(f*x+e))^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{(dx + c)^{m+1} a^{2}}{d(m+1)} + \frac{b^{2} e^{\left(m \log(dx+c) + \log(dx+c)\right)} - \left(b^{2} dm + b^{2} d\right) \int (dx + c)^{m} \cos \left(2 fx + 2 e\right) \, dx + 4 \, (abdm + abd) \int (dx +}{2 \, (dm + d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] (d*x + c)^(m + 1)*a^2/(d*(m + 1)) + 1/2*(b^2*e^(m*log(d*x + c) + log(d*x +
c)) - (b^2*d*m + b^2*d)*integrate((d*x + c)^m*cos(2*f*x + 2*e), x) + 4*(a*b
*d*m + a*b*d)*integrate((d*x + c)^m*sin(f*x + e), x))/(d*m + d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(a + b \, \sin \left(e + f \, x\right)\right)}^{2} \, {\left(c + d \, x\right)}^{m} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))^2*(c + d*x)^m,x)
```

```
[Out] int((a + b*sin(e + f*x))^2*(c + d*x)^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + b\sin\left(e + fx\right)\right)^{2}(c + dx)^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+b*sin(f*x+e))**2,x)
```

```
[Out] Integral((a + b*sin(e + f*x))**2*(c + d*x)**m, x)
```

3.176 $\int (c+dx)^m (a+b\sin(e+fx))\,dx$

Optimal. Leaf size=148

$$\frac{a(c+dx)^{m+1}}{d(m+1)}-\frac{be^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right)}{2f}-\frac{be^{-i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{if(c+dx)}{d}\right)}{2f}$$

```
[Out] a*(d*x+c)^(1+m)/d/(1+m)-1/2*b*exp(I*(e-c*f/d))*(d*x+c)^m*GAMMA(1+m,-I*f*(d*
x+c)/d)/f/((-I*f*(d*x+c)/d)^m)-1/2*b*(d*x+c)^m*GAMMA(1+m,I*f*(d*x+c)/d)/exp
(I*(e-c*f/d))/f/((I*f*(d*x+c)/d)^m)
```

Rubi [A] time = 0.15, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {3317, 3308, 2181}

$$-\frac{be^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,-\frac{if(c+dx)}{d}\right)}{2f}-\frac{be^{-i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(\frac{if(c+dx)}{d}\right)^{-m}\text{Gamma}\left(m+1,\frac{if(c+dx)}{d}\right)}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^m*(a + b*Sin[e + f*x]),x]
```

```
[Out] (a*(c + d*x)^(1 + m))/(d*(1 + m)) - (b*E^(I*(e - (c*f)/d))*(c + d*x)^m*Gamm
a[1 + m, ((-I)*f*(c + d*x))/d])/(2*f*(((-I)*f*(c + d*x))/d)^m) - (b*(c + d*
x)^m*Gamma[1 + m, (I*f*(c + d*x))/d])/(2*E^(I*(e - (c*f)/d))*f*((I*f*(c + d
*x))/d)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3317

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Int[ExpandIntegrand[(c + d*x)^m, (a + b*Sin[e + f*x])^n, x],
 x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 0] && (EqQ[n, 1] || IGtQ[
m, 0] || NeQ[a^2 - b^2, 0])
```

Rubi steps

$$\begin{aligned}\int (c+dx)^m(a+b\sin(e+fx))\,dx &= \int \left(a(c+dx)^m+b(c+dx)^m\sin(e+fx)\right)\,dx\\ &= \frac{a(c+dx)^{1+m}}{d(1+m)}+b\int (c+dx)^m\sin(e+fx)\,dx\\ &= \frac{a(c+dx)^{1+m}}{d(1+m)}+\frac{1}{2}(ib)\int e^{-i(e+fx)}(c+dx)^m\,dx-\frac{1}{2}(ib)\int e^{i(e+fx)}(c+dx)^m\,dx\\ &= \frac{a(c+dx)^{1+m}}{d(1+m)}-\frac{be^{i\left(e-\frac{cf}{d}\right)}(c+dx)^m\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(1+m,-\frac{if(c+dx)}{d}\right)}{2f}-\frac{be^{-i\left(\right.}}{}\end{aligned}$$

Mathematica [A] time = 0.21, size = 138, normalized size = 0.93

$$\frac{1}{2}(c+dx)^m\left(\frac{2a(c+dx)}{d(m+1)}-\frac{be^{i\left(e-\frac{cf}{d}\right)}\left(-\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,-\frac{if(c+dx)}{d}\right)}{f}-\frac{be^{-i\left(e-\frac{cf}{d}\right)}\left(\frac{if(c+dx)}{d}\right)^{-m}\Gamma\left(m+1,\frac{if(c+dx)}{d}\right)}{f}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^m*(a + b*Sin[e + f*x]),x]
```

```
[Out] ((c + d*x)^m*((2*a*(c + d*x))/(d*(1 + m)) - (b*E^(I*(e - (c*f)/d))*Gamma[1
+ m, ((-I)*f*(c + d*x))/d])/(f*(((-I)*f*(c + d*x))/d)^m) - (b*Gamma[1 + m,
(I*f*(c + d*x))/d])/(E^(I*(e - (c*f)/d))*f*((I*f*(c + d*x))/d)^m)))/2
```

fricas [A] time = 0.48, size = 136, normalized size = 0.92

$$-\frac{(bdm+bd)e^{\left(-\frac{dm\log\left(\frac{if}{d}\right)+ide-icf}{d}\right)}\Gamma\left(m+1,\frac{idfx+icf}{d}\right)+(bdm+bd)e^{\left(-\frac{dm\log\left(-\frac{if}{d}\right)-ide+icf}{d}\right)}\Gamma\left(m+1,\frac{-idfx-icf}{d}\right)-2\left(adf\right.}{2\left(dfm+df\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e)),x, algorithm="fricas")
```

```
[Out] -1/2*((b*d*m + b*d)*e^(-(d*m*log(I*f/d) + I*d*e - I*c*f)/d)*gamma(m + 1, (I
*d*f*x + I*c*f)/d) + (b*d*m + b*d)*e^(-(d*m*log(-I*f/d) - I*d*e + I*c*f)/d)
*gamma(m + 1, (-I*d*f*x - I*c*f)/d) - 2*(a*d*f*x + a*c*f)*(d*x + c)^m)/(d*f
*m + d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b\sin\left(fx+e\right)+a\right)(dx+c)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e)),x, algorithm="giac")
```

```
[Out] integrate((b*sin(f*x + e) + a)*(d*x + c)^m, x)
```

maple [F] time = 0.10, size = 0, normalized size = 0.00

$$\int (dx+c)^{m}\left(a+b\sin\left(fx+e\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m*(a+b*sin(f*x+e)),x)
```

```
[Out] int((d*x+c)^m*(a+b*sin(f*x+e)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$b\int (dx+c)^{m}\sin\left(fx+e\right)dx+\frac{(dx+c)^{m+1}a}{d(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m*(a+b*sin(f*x+e)),x, algorithm="maxima")
```

```
[Out] b*integrate((d*x + c)^m*sin(f*x + e), x) + (d*x + c)^(m + 1)*a/(d*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(a+b\,\sin\left(e+f\,x\right)\right)\,{(c+d\,x)}^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*sin(e + f*x))*(c + d*x)^m,x)
```

```
[Out] int((a + b*sin(e + f*x))*(c + d*x)^m, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\sin\left(e+fx\right)\right)(c+dx)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m*(a+b*sin(f*x+e)),x)
[Out] Integral((a + b*sin(e + f*x))*(c + d*x)**m, x)
```

3.177 $\int \frac{(c+dx)^m}{a+b\sin(e+fx)}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{(c+dx)^m}{a+b\sin(e+fx)},x\right)$$

```
[Out] Unintegrable((d*x+c)^m/(a+b*sin(f*x+e)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(c+dx)^m}{a+b\sin(e+fx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(c + d*x)^m/(a + b*Sin[e + f*x]),x]
```

```
[Out] Defer[Int][(c + d*x)^m/(a + b*Sin[e + f*x]), x]
```

Rubi steps

$$\int \frac{(c+dx)^m}{a+b\sin(e+fx)}\,dx = \int \frac{(c+dx)^m}{a+b\sin(e+fx)}\,dx$$

Mathematica [A] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{a+b\sin(e+fx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(c + d*x)^m/(a + b*Sin[e + f*x]),x]
```

```
[Out] Integrate[(c + d*x)^m/(a + b*Sin[e + f*x]), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(dx+c)^m}{b\sin\left(fx+e\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sin(f*x+e)),x, algorithm="fricas")
[Out] integral((d*x + c)^m/(b*sin(f*x + e) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{b\sin\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sin(f*x+e)),x, algorithm="giac")
[Out] integrate((d*x + c)^m/(b*sin(f*x + e) + a), x)
```

maple [A] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{a+b\sin\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m/(a+b*sin(f*x+e)),x)
[Out] int((d*x+c)^m/(a+b*sin(f*x+e)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{b\sin\left(fx+e\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sin(f*x+e)),x, algorithm="maxima")
[Out] integrate((d*x + c)^m/(b*sin(f*x + e) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(c+d\,x)^m}{a+b\,\sin\left(e+f\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/(a + b*sin(e + f*x)),x)
[Out] int((c + d*x)^m/(a + b*sin(e + f*x)), x)
```

<u>**sympy**</u> **[A]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(c + dx)^m}{a + b\sin\left(e + fx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m/(a+b*sin(f*x+e)),x)
```

```
[Out] Integral((c + d*x)**m/(a + b*sin(e + f*x)), x)
```

3.178 $\int \frac{(c+dx)^m}{(a+b\sin(e+fx))^2}\,dx$

Optimal. Leaf size=23

$$\operatorname{Int}\left(\frac{(c+dx)^m}{(a+b\sin(e+fx))^2},x\right)$$

[Out] Unintegrable((d*x+c)^m/(a+b*sin(f*x+e))^2,x)

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(c+dx)^m}{(a+b\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

[In] Int[(c + d*x)^m/(a + b*Sin[e + f*x])^2,x]

[Out] Defer[Int][(c + d*x)^m/(a + b*Sin[e + f*x])^2, x]

Rubi steps

$$\int \frac{(c+dx)^m}{(a+b\sin(e+fx))^2}\,dx=\int \frac{(c+dx)^m}{(a+b\sin(e+fx))^2}\,dx$$

Mathematica [A] time = 4.13, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{(a+b\sin(e+fx))^2}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[(c + d*x)^m/(a + b*Sin[e + f*x])^2,x]

[Out] Integrate[(c + d*x)^m/(a + b*Sin[e + f*x])^2, x]

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{(dx+c)^m}{b^2\cos\left(fx+e\right)^2-2\,ab\sin\left(fx+e\right)-a^2-b^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sin(f*x+e))^2,x, algorithm="fricas")
```

```
[Out] integral(-(d*x + c)^m/(b^2*cos(f*x + e)^2 - 2*a*b*sin(f*x + e) - a^2 - b^2)
, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(b\sin\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sin(f*x+e))^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^m/(b*sin(f*x + e) + a)^2, x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(a+b\sin\left(fx+e\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^m/(a+b*sin(f*x+e))^2,x)
```

```
[Out] int((d*x+c)^m/(a+b*sin(f*x+e))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(dx+c)^m}{\left(b\sin\left(fx+e\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)^m/(a+b*sin(f*x+e))^2,x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^m/(b*sin(f*x + e) + a)^2, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(c+d\,x)^m}{\left(a+b\,\sin\left(e+f\,x\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c + d*x)^m/(a + b*sin(e + f*x))^2,x)
```

```
[Out] int((c + d*x)^m/(a + b*sin(e + f*x))^2, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(c+dx)^m}{\left(a+b\sin\left(e+fx\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x+c)**m/(a+b*sin(f*x+e))**2,x)
```

```
[Out] Integral((c + d*x)**m/(a + b*sin(e + f*x))**2, x)
```

3.179 $\int \frac{(e+fx)^3 \sin(c+dx)}{a+a\sin(c+dx)}\, dx$

Optimal. Leaf size=164

$$-\frac{12f^3\text{Li}_3\left(ie^{i(c+dx)}\right)}{ad^4}+\frac{12if^2(e+fx)\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}-\frac{6f(e+fx)^2\log\left(1-ie^{i(c+dx)}\right)}{ad^2}+\frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}+\frac{i(e$$

```
[Out] I*(f*x+e)^3/a/d+1/4*(f*x+e)^4/a/f+(f*x+e)^3*cot(1/2*c+1/4*Pi+1/2*d*x)/a/d-6
*f*(f*x+e)^2*ln(1-I*exp(I*(d*x+c)))/a/d^2+12*I*f^2*(f*x+e)*polylog(2,I*exp(
I*(d*x+c)))/a/d^3-12*f^3*polylog(3,I*exp(I*(d*x+c)))/a/d^4
```

Rubi [A] time = 0.34, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {4515, 32, 3318, 4184, 3717, 2190, 2531, 2282, 6589}

$$\frac{12if^2(e+fx)\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}-\frac{12f^3\text{PolyLog}\left(3,ie^{i(c+dx)}\right)}{ad^4}-\frac{6f(e+fx)^2\log\left(1-ie^{i(c+dx)}\right)}{ad^2}+\frac{(e+fx)^3\cot\left(\frac{c}{2}\right.}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sin[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (I*(e + f*x)^3)/(a*d) + (e + f*x)^4/(4*a*f) + ((e + f*x)^3*Cot[c/2 + Pi/4 +
 (d*x)/2])/(a*d) - (6*f*(e + f*x)^2*Log[1 - I*E^(I*(c + d*x))])/(a*d^2) + (
(12*I)*f^2*(e + f*x)*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^3) - (12*f^3*PolyL
og[3, I*E^(I*(c + d*x))])/(a*d^4)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
```

```
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\sin(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\,dx}{a} - \int \frac{(e+fx)^3}{a+a\sin(c+dx)}\,dx$$

$$= \frac{(e+fx)^4}{4af} - \frac{\int (e+fx)^3\csc^2\left(\frac{1}{2}\left(c+\frac{\pi}{2}\right)+\frac{dx}{2}\right)dx}{2a}$$

$$= \frac{(e+fx)^4}{4af} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(3f)\int (e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)dx}{ad}$$

$$= \frac{i(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(6f)\int \frac{e^{2i\left(\frac{c}{2}+\frac{dx}{2}\right)}(e+fx)^2}{1-ie^{2i\left(\frac{c}{2}+\frac{dx}{2}\right)}}\,dx}{ad}$$

$$= \frac{i(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{6f(e+fx)^2\log\left(1-ie^{i(c+dx)}\right.}{ad^2}$$

$$= \frac{i(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{6f(e+fx)^2\log\left(1-ie^{i(c+dx)}\right.}{ad^2}$$

$$= \frac{i(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{6f(e+fx)^2\log\left(1-ie^{i(c+dx)}\right.}{ad^2}$$

$$= \frac{i(e+fx)^3}{ad} + \frac{(e+fx)^4}{4af} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{6f(e+fx)^2\log\left(1-ie^{i(c+dx)}\right.}{ad^2}$$

Mathematica [A] time = 2.04, size = 261, normalized size = 1.59

$$\frac{\frac{24f(\cos(c)+i\sin(c))\left(\frac{2f(\cos(c)-i(\sin(c)+1))(d(e+fx)\text{Li}_2(-i\cos(c+dx)-\sin(c+dx))-if\text{Li}_3(-i\cos(c+dx)-\sin(c+dx)))}{d^3}-\frac{(\sin(c)+i\cos(c)+1)(e+fx)^2\log(\sin(c+dx)+i\cos(c+dx)+1)}{d}+\right.}{d(\cos(c)+i(\sin(c)+1))}}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sin[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3) + (24*f*(Cos[c] + I*Sin[c])*
(((e + f*x)^3*(Cos[c] - I*Sin[c]))/(3*f) - ((e + f*x)^2*Log[1 + I*Cos[c + d
*x] + Sin[c + d*x]]*(1 + I*Cos[c] + Sin[c]))/d + (2*f*(d*(e + f*x)*PolyLog[
2, (-I)*Cos[c + d*x] - Sin[c + d*x]] - I*f*PolyLog[3, (-I)*Cos[c + d*x] - S
in[c + d*x]])*(Cos[c] - I*(1 + Sin[c])))/d^3))/(d*(Cos[c] + I*(1 + Sin[c]))
) - (8*(e + f*x)^3*Sin[(d*x)/2])/(d*(Cos[c/2] + Sin[c/2])*(Cos[(c + d*x)/2]
 + Sin[(c + d*x)/2])))/(4*a)
```

fricas [C] time = 0.51, size = 1042, normalized size = 6.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(d^4*f^3*x^4 + 4*d^3*e^3 + 4*(d^4*e*f^2 + d^3*f^3)*x^3 + 6*(d^4*e^2*f +
 2*d^3*e*f^2)*x^2 + 4*(d^4*e^3 + 3*d^3*e^2*f)*x + (d^4*f^3*x^4 + 4*d^3*e^3
+ 4*(d^4*e*f^2 + d^3*f^3)*x^3 + 6*(d^4*e^2*f + 2*d^3*e*f^2)*x^2 + 4*(d^4*e^
3 + 3*d^3*e^2*f)*x)*cos(d*x + c) + (24*I*d*f^3*x + 24*I*d*e*f^2 + (24*I*d*f
^3*x + 24*I*d*e*f^2)*cos(d*x + c) + (24*I*d*f^3*x + 24*I*d*e*f^2)*sin(d*x +
 c))*dilog(I*cos(d*x + c) - sin(d*x + c)) + (-24*I*d*f^3*x - 24*I*d*e*f^2 +
 (-24*I*d*f^3*x - 24*I*d*e*f^2)*cos(d*x + c) + (-24*I*d*f^3*x - 24*I*d*e*f^
2)*sin(d*x + c))*dilog(-I*cos(d*x + c) - sin(d*x + c)) - 12*(d^2*e^2*f - 2*
c*d*e*f^2 + c^2*f^3 + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c) + (d
^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*
x + c) + I) - 12*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3 + (d^
2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c) + (d^2*f^3*
x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*sin(d*x + c))*log(I*cos(d*x +
c) + sin(d*x + c) + 1) - 12*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^
2*f^3 + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c)
+ (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*sin(d*x + c))*log(-
I*cos(d*x + c) + sin(d*x + c) + 1) - 12*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3
+ (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c) + (d^2*e^2*f - 2*c*d*e*f
^2 + c^2*f^3)*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + I) - 24*(f
^3*cos(d*x + c) + f^3*sin(d*x + c) + f^3)*polylog(3, I*cos(d*x + c) - sin(d
*x + c)) - 24*(f^3*cos(d*x + c) + f^3*sin(d*x + c) + f^3)*polylog(3, -I*cos
(d*x + c) - sin(d*x + c)) + (d^4*f^3*x^4 - 4*d^3*e^3 + 4*(d^4*e*f^2 - d^3*f
^3)*x^3 + 6*(d^4*e^2*f - 2*d^3*e*f^2)*x^2 + 4*(d^4*e^3 - 3*d^3*e^2*f)*x)*si
n(d*x + c))/(a*d^4*cos(d*x + c) + a*d^4*sin(d*x + c) + a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \sin(dx+c)}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sin(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.27, size = 526, normalized size = 3.21

$$\frac{f^{3} x^{4}}{4a}+\frac{e\,f^{2} x^{3}}{a}+\frac{3e^{2} f\,x^{2}}{2a}+\frac{e^{3} x}{a}+\frac{2 f^{3} x^{3}+6e\,f^{2} x^{2}+6e^{2} f x+2e^{3}}{d a \left(\mathrm{e}^{i(dx+c)}+i\right)}+\frac{12 i f^{3} \operatorname{polylog}\left(2, i\mathrm{e}^{i(dx+c)}\right) x}{a\,d^{3}}+\frac{6 i f^{2} e\,c^{2}}{a\,d^{3}}-\frac{6 f \ln\left(\mathrm{e}^{i(d}\right.}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sin(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] 1/4/a*f^3*x^4+1/a*e*f^2*x^3+3/2/a*e^2*f*x^2+1/a*e^3*x+2*(f^3*x^3+3*e*f^2*x^
2+3*e^2*f*x+e^3)/d/a/(exp(I*(d*x+c))+I)+6*I/a/d^3*f^2*e*c^2+6*I/a/d*f^2*e*x
^2-6/a/d^2*f*ln(exp(I*(d*x+c))+I)*e^2-12/a/d^2*f^2*e*ln(1-I*exp(I*(d*x+c)))
*x-12/a/d^3*f^2*e*ln(1-I*exp(I*(d*x+c)))*c-12/a/d^3*f^2*e*c*ln(exp(I*(d*x+c
)))-6*I/a/d^3*f^3*c^2*x-6/a/d^2*f^3*ln(1-I*exp(I*(d*x+c)))*x^2+6/a/d^4*f^3*
ln(1-I*exp(I*(d*x+c)))*c^2+6/a/d^2*f*ln(exp(I*(d*x+c)))*e^2+12*I/a/d^3*f^3*
polylog(2,I*exp(I*(d*x+c)))*x+2*I/a/d*f^3*x^3-4*I/a/d^4*f^3*c^3-12*f^3*poly
log(3,I*exp(I*(d*x+c)))/a/d^4+6/a/d^4*f^3*c^2*ln(exp(I*(d*x+c)))+12*I/a/d^3
*f^2*e*polylog(2,I*exp(I*(d*x+c)))-6/a/d^4*f^3*c^2*ln(exp(I*(d*x+c))+I)+12*
I/a/d^2*f^2*e*c*x+12/a/d^3*f^2*e*c*ln(exp(I*(d*x+c))+I)
```

maxima [B] time = 0.63, size = 1307, normalized size = 7.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(12*c^2*e*f^2*(1/(a*d^2 + a*d^2*sin(d*x + c)/(cos(d*x + c) + 1)) + arct
an(sin(d*x + c)/(cos(d*x + c) + 1))/(a*d^2)) - 12*c*e^2*f*(1/(a*d + a*d*sin
(d*x + c)/(cos(d*x + c) + 1)) + arctan(sin(d*x + c)/(cos(d*x + c) + 1))/(a*
d)) - 6*((d*x + c)^2*cos(d*x + c)^2 + (d*x + c)^2*sin(d*x + c)^2 + 2*(d*x +
 c)^2*sin(d*x + c) + (d*x + c)^2 + 4*(d*x + c)*cos(d*x + c) - 2*(cos(d*x +
c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1)*log(cos(d*x + c)^2 + sin(d*x +
c)^2 + 2*sin(d*x + c) + 1))*c*e*f^2/(a*d^2*cos(d*x + c)^2 + a*d^2*sin(d*x +
 c)^2 + 2*a*d^2*sin(d*x + c) + a*d^2) + 4*e^3*(arctan(sin(d*x + c)/(cos(d*x
 + c) + 1))/a + 1/(a + a*sin(d*x + c)/(cos(d*x + c) + 1))) + 3*((d*x + c)^2
*cos(d*x + c)^2 + (d*x + c)^2*sin(d*x + c)^2 + 2*(d*x + c)^2*sin(d*x + c) +
 (d*x + c)^2 + 4*(d*x + c)*cos(d*x + c) - 2*(cos(d*x + c)^2 + sin(d*x + c)^
2 + 2*sin(d*x + c) + 1)*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c
```

```
) + 1))*e^2*f/(a*d*cos(d*x + c)^2 + a*d*sin(d*x + c)^2 + 2*a*d*sin(d*x + c)
 + a*d) + 2*((d*x + c)^4*f^3 + 6*(d*x + c)^2*c^2*f^3 - 4*(d*x + c)*c^3*f^3
+ 8*I*c^3*f^3 + 4*(d*e*f^2 - c*f^3)*(d*x + c)^3 - (24*c^2*f^3*cos(d*x + c)
+ 24*I*c^2*f^3*sin(d*x + c) + 24*I*c^2*f^3)*arctan2(sin(d*x + c) + 1, cos(d
*x + c)) - (-24*I*(d*x + c)^2*f^3 + (-48*I*d*e*f^2 + 48*I*c*f^3)*(d*x + c)
- 24*((d*x + c)^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*cos(d*x + c) + (-24*
I*(d*x + c)^2*f^3 + (-48*I*d*e*f^2 + 48*I*c*f^3)*(d*x + c))*sin(d*x + c))*a
rctan2(cos(d*x + c), sin(d*x + c) + 1) - (I*(d*x + c)^4*f^3 + (-4*I*c^3 - 2
4*c^2)*(d*x + c)*f^3 + (4*I*d*e*f^2 - 4*(I*c + 2)*f^3)*(d*x + c)^3 - (24*d*
e*f^2 - (6*I*c^2 + 24*c)*f^3)*(d*x + c)^2)*cos(d*x + c) - (-48*I*d*e*f^2 -
48*I*(d*x + c)*f^3 + 48*I*c*f^3 - 48*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(
d*x + c) + (-48*I*d*e*f^2 - 48*I*(d*x + c)*f^3 + 48*I*c*f^3)*sin(d*x + c))*
dilog(I*e^(I*d*x + I*c)) - (12*(d*x + c)^2*f^3 + 12*c^2*f^3 + 24*(d*e*f^2 -
 c*f^3)*(d*x + c) + (-12*I*(d*x + c)^2*f^3 - 12*I*c^2*f^3 + (-24*I*d*e*f^2
+ 24*I*c*f^3)*(d*x + c))*cos(d*x + c) + 12*((d*x + c)^2*f^3 + c^2*f^3 + 2*(
d*e*f^2 - c*f^3)*(d*x + c))*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)
^2 + 2*sin(d*x + c) + 1) + 48*(I*f^3*cos(d*x + c) - f^3*sin(d*x + c) - f^3)
*polylog(3, I*e^(I*d*x + I*c)) + ((d*x + c)^4*f^3 - 4*(c^3 - 6*I*c^2)*(d*x
+ c)*f^3 + (4*d*e*f^2 - (4*c - 8*I)*f^3)*(d*x + c)^3 + 6*(4*I*d*e*f^2 + (c^
2 - 4*I*c)*f^3)*(d*x + c)^2)*sin(d*x + c))/(-4*I*a*d^3*cos(d*x + c) + 4*a*d
^3*sin(d*x + c) + 4*a*d^3))/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sin(c+d\,x)\,\left(e+f\,x\right)^3}{a+a\,\sin(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x)^3)/(a + a*sin(c + d*x)),x)
```

```
[Out] int((sin(c + d*x)*(e + f*x)^3)/(a + a*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^3\sin(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{f^3x^3\sin(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{3ef^2x^2\sin(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{3e^2fx\sin(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sin(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**3*sin(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f**3*x**3*sin
(c + d*x)/(sin(c + d*x) + 1), x) + Integral(3*e*f**2*x**2*sin(c + d*x)/(sin
(c + d*x) + 1), x) + Integral(3*e**2*f*x*sin(c + d*x)/(sin(c + d*x) + 1), x
))/a
```

3.180 $\int \frac{(e+fx)^2 \sin(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=129

$$\frac{4if^2\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}-\frac{4f(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad^2}+\frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}+\frac{i(e+fx)^2}{ad}+\frac{(e+fx)^3}{3af}$$

```
[Out] I*(f*x+e)^2/a/d+1/3*(f*x+e)^3/a/f+(f*x+e)^2*cot(1/2*c+1/4*Pi+1/2*d*x)/a/d-4
*f*(f*x+e)*ln(1-I*exp(I*(d*x+c)))/a/d^2+4*I*f^2*polylog(2,I*exp(I*(d*x+c)))
/a/d^3
```

Rubi [A] time = 0.26, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4515, 32, 3318, 4184, 3717, 2190, 2279, 2391}

$$\frac{4if^2\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}-\frac{4f(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad^2}+\frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}+\frac{i(e+fx)^2}{ad}+\frac{(e+fx)^3}{3af}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sin[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (I*(e + f*x)^2)/(a*d) + (e + f*x)^3/(3*a*f) + ((e + f*x)^2*Cot[c/2 + Pi/4 +
 (d*x)/2])/(a*d) - (4*f*(e + f*x)*Log[1 - I*E^(I*(c + d*x))])/(a*d^2) + ((4
*I)*f^2*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^3)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2\sin(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\,dx}{a} - \int \frac{(e+fx)^2}{a+a\sin(c+dx)}\,dx$$
$$= \frac{(e+fx)^3}{3af} - \frac{\int (e+fx)^2\csc^2\left(\frac{1}{2}\left(c+\frac{\pi}{2}\right)+\frac{dx}{2}\right)dx}{2a}$$
$$= \frac{(e+fx)^3}{3af} + \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(2f)\int (e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)dx}{ad}$$
$$= \frac{i(e+fx)^2}{ad} + \frac{(e+fx)^3}{3af} + \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(4f)\int \frac{e^{2i\left(\frac{c}{2}+\frac{dx}{2}\right)}(e+fx)}{1-ie^{2i\left(\frac{c}{2}+\frac{dx}{2}\right)}}\,dx}{ad}$$
$$= \frac{i(e+fx)^2}{ad} + \frac{(e+fx)^3}{3af} + \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{4f(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad^2}$$
$$= \frac{i(e+fx)^2}{ad} + \frac{(e+fx)^3}{3af} + \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{4f(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad^2}$$
$$= \frac{i(e+fx)^2}{ad} + \frac{(e+fx)^3}{3af} + \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{4f(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad^2}$$

Mathematica [A] time = 1.39, size = 213, normalized size = 1.65

$$\frac{\frac{12f(\cos(c)+i\sin(c))\left(\frac{f(\cos(c)-i(\sin(c)+1))\text{Li}_2(-i\cos(c+dx)-\sin(c+dx))}{d^2}-\frac{(\sin(c)+i\cos(c)+1)(e+fx)\log(\sin(c+dx)+i\cos(c+dx)+1)}{d}+\frac{(\cos(c)-i\sin(c))(e+fx)^2}{2f}\right)}{d(\cos(c)+i(\sin(c)+1))} - \frac{\cdots}{d\left(\sin\left(\frac{c}{2}\right)+\cdots\right.}}{3a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sin[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (x*(3*e^2 + 3*e*f*x + f^2*x^2) + (12*f*(Cos[c] + I*Sin[c])*(((e + f*x)^2*(C
os[c] - I*Sin[c]))/(2*f) - ((e + f*x)*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]
]*(1 + I*Cos[c] + Sin[c]))/d + (f*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*
x]]*(Cos[c] - I*(1 + Sin[c])))/d^2))/(d*(Cos[c] + I*(1 + Sin[c]))) - (6*(e
+ f*x)^2*Sin[(d*x)/2])/(d*(Cos[c/2] + Sin[c/2])*(Cos[(c + d*x)/2] + Sin[(c
+ d*x)/2])))/(3*a)
```

fricas [B] time = 0.51, size = 581, normalized size = 4.50

$$\frac{d^3f^2x^3+3\,d^2e^2+3\left(d^3ef+d^2f^2\right)x^2+3\left(d^3e^2+2\,d^2ef\right)x+\left(d^3f^2x^3+3\,d^2e^2+3\left(d^3ef+d^2f^2\right)x^2+3\left(d^3e^2+2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/3*(d^3*f^2*x^3 + 3*d^2*e^2 + 3*(d^3*e*f + d^2*f^2)*x^2 + 3*(d^3*e^2 + 2*d
^2*e*f)*x + (d^3*f^2*x^3 + 3*d^2*e^2 + 3*(d^3*e*f + d^2*f^2)*x^2 + 3*(d^3*e
^2 + 2*d^2*e*f)*x)*cos(d*x + c) + (6*I*f^2*cos(d*x + c) + 6*I*f^2*sin(d*x +
 c) + 6*I*f^2)*dilog(I*cos(d*x + c) - sin(d*x + c)) + (-6*I*f^2*cos(d*x + c
) - 6*I*f^2*sin(d*x + c) - 6*I*f^2)*dilog(-I*cos(d*x + c) - sin(d*x + c)) -
 6*(d*e*f - c*f^2 + (d*e*f - c*f^2)*cos(d*x + c) + (d*e*f - c*f^2)*sin(d*x
+ c))*log(cos(d*x + c) + I*sin(d*x + c) + I) - 6*(d*f^2*x + c*f^2 + (d*f^2*
x + c*f^2)*cos(d*x + c) + (d*f^2*x + c*f^2)*sin(d*x + c))*log(I*cos(d*x + c
) + sin(d*x + c) + 1) - 6*(d*f^2*x + c*f^2 + (d*f^2*x + c*f^2)*cos(d*x + c)
 + (d*f^2*x + c*f^2)*sin(d*x + c))*log(-I*cos(d*x + c) + sin(d*x + c) + 1)
- 6*(d*e*f - c*f^2 + (d*e*f - c*f^2)*cos(d*x + c) + (d*e*f - c*f^2)*sin(d*x
 + c))*log(-cos(d*x + c) + I*sin(d*x + c) + I) + (d^3*f^2*x^3 - 3*d^2*e^2 +
 3*(d^3*e*f - d^2*f^2)*x^2 + 3*(d^3*e^2 - 2*d^2*e*f)*x)*sin(d*x + c))/(a*d^
3*cos(d*x + c) + a*d^3*sin(d*x + c) + a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\sin\left(dx+c\right)}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sin(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.18, size = 282, normalized size = 2.19

$$\frac{f^2x^3}{3a}+\frac{fe\,x^2}{a}+\frac{e^2x}{a}+\frac{2f^2x^2+4fex+2e^2}{da\left(e^{i(dx+c)}+i\right)}-\frac{4f\ln\left(e^{i(dx+c)}+i\right)e}{a\,d^2}+\frac{4f\ln\left(e^{i(dx+c)}\right)e}{a\,d^2}+\frac{2if^2x^2}{ad}+\frac{4if^2cx}{a\,d^2}+\frac{2if^2c^2}{a\,d^3}-\frac{4f^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sin(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] 1/3/a*f^2*x^3+1/a*f*e*x^2+1/a*e^2*x+2*(f^2*x^2+2*e*f*x+e^2)/d/a/(exp(I*(d*x
+c))+I)-4/a/d^2*f*ln(exp(I*(d*x+c))+I)*e+4/a/d^2*f*ln(exp(I*(d*x+c)))*e+2*I
```

```
/a/d*f^2*x^2+4*I/a/d^2*f^2*c*x+2*I/a/d^3*f^2*c^2-4/a/d^2*f^2*ln(1-I*exp(I*(
d*x+c)))*x-4/a/d^3*f^2*ln(1-I*exp(I*(d*x+c)))*c+4*I*f^2*polylog(2,I*exp(I*(
d*x+c)))/a/d^3+4/a/d^3*f^2*c*ln(exp(I*(d*x+c))+I)-4/a/d^3*f^2*c*ln(exp(I*(d
*x+c)))
```

maxima [B] time = 0.56, size = 404, normalized size = 3.13

$$\frac{d^3f^2x^3 + 3\,d^3efx^2 + 3\,d^3e^2x - 6i\,d^2e^2 - \left(12\,def\cos\left(dx+c\right) + 12i\,def\sin\left(dx+c\right) + 12i\,def\right)\arctan\left(\sin\left(dx+c\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] (d^3*f^2*x^3 + 3*d^3*e*f*x^2 + 3*d^3*e^2*x - 6*I*d^2*e^2 - (12*d*e*f*cos(d*
x + c) + 12*I*d*e*f*sin(d*x + c) + 12*I*d*e*f)*arctan2(sin(d*x + c) + 1, co
s(d*x + c)) + (12*d*f^2*x*cos(d*x + c) + 12*I*d*f^2*x*sin(d*x + c) + 12*I*d
*f^2*x)*arctan2(cos(d*x + c), sin(d*x + c) + 1) - (I*d^3*f^2*x^3 - 3*(-I*d^
3*e*f + 2*d^2*f^2)*x^2 + (3*I*d^3*e^2 - 12*d^2*e*f)*x)*cos(d*x + c) + (12*f
^2*cos(d*x + c) + 12*I*f^2*sin(d*x + c) + 12*I*f^2)*dilog(I*e^(I*d*x + I*c)
) - (6*d*f^2*x + 6*d*e*f + (-6*I*d*f^2*x - 6*I*d*e*f)*cos(d*x + c) + 6*(d*f
^2*x + d*e*f)*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x
 + c) + 1) + (d^3*f^2*x^3 + (3*d^3*e*f + 6*I*d^2*f^2)*x^2 + 3*(d^3*e^2 + 4*
I*d^2*e*f)*x)*sin(d*x + c))/(-3*I*a*d^3*cos(d*x + c) + 3*a*d^3*sin(d*x + c)
 + 3*a*d^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sin\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{a+a\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x)^2)/(a + a*sin(c + d*x)),x)
```

```
[Out] int((sin(c + d*x)*(e + f*x)^2)/(a + a*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^{2}\sin\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx + \int \frac{f^{2}x^{2}\sin\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx + \int \frac{2efx\sin\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sin(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**2*sin(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f**2*x**2*sin
(c + d*x)/(sin(c + d*x) + 1), x) + Integral(2*e*f*x*sin(c + d*x)/(sin(c + d
*x) + 1), x))/a
```

3.181 $\int \frac{(e+fx)\sin(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=76

$$-\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}+\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}+\frac{ex}{a}+\frac{fx^2}{2a}$$

```
[Out] e*x/a+1/2*f*x^2/a+(f*x+e)*cot(1/2*c+1/4*Pi+1/2*d*x)/a/d-2*f*ln(sin(1/2*c+1/
4*Pi+1/2*d*x))/a/d^2
```

Rubi [A] time = 0.10, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4515, 3318, 4184, 3475}

$$-\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}+\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}+\frac{ex}{a}+\frac{fx^2}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sin[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (e*x)/a + (f*x^2)/(2*a) + ((e + f*x)*Cot[c/2 + Pi/4 + (d*x)/2])/(a*d) - (2*
f*Log[Sin[c/2 + Pi/4 + (d*x)/2]])/(a*d^2)
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(e+fx)\sin(c+dx)}{a+a\sin(c+dx)}\,dx &= \frac{\int (e+fx)\,dx}{a}-\int \frac{e+fx}{a+a\sin(c+dx)}\,dx\\ &= \frac{ex}{a}+\frac{fx^2}{2a}-\frac{\int (e+fx)\csc^2\left(\frac{1}{2}\left(c+\frac{\pi}{2}\right)+\frac{dx}{2}\right)dx}{2a}\\ &= \frac{ex}{a}+\frac{fx^2}{2a}+\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad}-\frac{f\int \cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)dx}{ad}\\ &= \frac{ex}{a}+\frac{fx^2}{2a}+\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad}-\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\right)}{ad^2}\end{aligned}$$

Mathematica [B] time = 0.57, size = 199, normalized size = 2.62

$$\frac{\cos\left(\frac{dx}{2}\right)\left(d^2x(2e+fx)-4f\log\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)\right)+2d^2ex\sin\left(c+\frac{dx}{2}\right)+d^2fx^2\sin\left(c+\frac{dx}{2}\right)}{2ad^2\left(\sin\left(\frac{c}{2}\right)+\cos\left(\frac{c}{2}\right)\right)\left(\sin\left(\frac{1}{2}\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sin[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (2*d*f*x*Cos[c + (d*x)/2] + Cos[(d*x)/2]*(d^2*x*(2*e + f*x) - 4*f*Log[Cos[(
c + d*x)/2] + Sin[(c + d*x)/2]]) - 4*d*e*Sin[(d*x)/2] - 2*d*f*x*Sin[(d*x)/2
] + 2*d^2*e*x*Sin[c + (d*x)/2] + d^2*f*x^2*Sin[c + (d*x)/2] - 4*f*Log[Cos[(
c + d*x)/2] + Sin[(c + d*x)/2]]*Sin[c + (d*x)/2])/(2*a*d^2*(Cos[c/2] + Sin[
c/2])*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]))
```

fricas [B] time = 0.44, size = 151, normalized size = 1.99

$$\frac{d^2fx^2+2\,de+2\left(d^2e+df\right)x+\left(d^2fx^2+2\,de+2\left(d^2e+df\right)x\right)\cos\left(dx+c\right)-2\left(f\cos\left(dx+c\right)+f\sin\left(dx+c\right)\right.}{2\left(ad^2\cos\left(dx+c\right)+ad^2\sin\left(dx+c\right)+ad\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(d^2*f*x^2 + 2*d*e + 2*(d^2*e + d*f)*x + (d^2*f*x^2 + 2*d*e + 2*(d^2*e
+ d*f)*x)*cos(d*x + c) - 2*(f*cos(d*x + c) + f*sin(d*x + c) + f)*log(sin(d*
x + c) + 1) + (d^2*f*x^2 - 2*d*e + 2*(d^2*e - d*f)*x)*sin(d*x + c))/(a*d^2*
cos(d*x + c) + a*d^2*sin(d*x + c) + a*d^2)
```

giac [B] time = 1.71, size = 772, normalized size = 10.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(d^2*f*x^2*tan(1/2*d*x)*tan(1/2*c) - d^2*f*x^2*tan(1/2*d*x) - d^2*f*x^2
*tan(1/2*c) + 2*d^2*x*e*tan(1/2*d*x)*tan(1/2*c) - d^2*f*x^2 - 2*d^2*x*e*tan
(1/2*d*x) - 2*d^2*x*e*tan(1/2*c) + 2*d*f*x*tan(1/2*d*x)*tan(1/2*c) - 2*d^2*
x*e + 2*d*f*x*tan(1/2*d*x) + 2*d*f*x*tan(1/2*c) + 2*d*e*tan(1/2*d*x)*tan(1/
2*c) - 2*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c)
 - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/
2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2
+ tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan
(1/2*d*x)*tan(1/2*c) - 2*d*f*x + 2*d*e*tan(1/2*d*x) + 2*f*log(2*(tan(1/2*d*
x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*
c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 -
2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d
*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x) + 2*d*e*tan(1/2*c)
 + 2*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2
*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)
^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + ta
n(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2
*c) - 2*d*e + 2*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan
(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2
*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*
d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 +
1)))/(a*d^2*tan(1/2*d*x)*tan(1/2*c) - a*d^2*tan(1/2*d*x) - a*d^2*tan(1/2*c)
 - a*d^2)
```

maple [B] time = 0.14, size = 446, normalized size = 5.87

$$\frac{2e\arctan\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{ad}+\frac{2e}{ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{fx}{a\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)d}+\frac{fx\left(\tan\right.}{a\left(1+\tan^2\left(\frac{dx}{2}+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sin(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] 2/a*e/d*arctan(tan(1/2*d*x+1/2*c))+2/a*e/d/(tan(1/2*d*x+1/2*c)+1)+1/a*f/(1+
tan(1/2*d*x+1/2*c)^2)/(tan(1/2*d*x+1/2*c)+1)*x/d+1/a*f/(1+tan(1/2*d*x+1/2*c
)^2)/(tan(1/2*d*x+1/2*c)+1)*x/d*tan(1/2*d*x+1/2*c)^2+1/2/a*f/(1+tan(1/2*d*x
+1/2*c)^2)/(tan(1/2*d*x+1/2*c)+1)*x^2+1/2/a*f/(1+tan(1/2*d*x+1/2*c)^2)/(tan
(1/2*d*x+1/2*c)+1)*x^2*tan(1/2*d*x+1/2*c)+1/2/a*f/(1+tan(1/2*d*x+1/2*c)^2)/
(tan(1/2*d*x+1/2*c)+1)*x^2*tan(1/2*d*x+1/2*c)^2+1/2/a*f/(1+tan(1/2*d*x+1/2*
c)^2)/(tan(1/2*d*x+1/2*c)+1)*x^2*tan(1/2*d*x+1/2*c)^3-1/a*f/(1+tan(1/2*d*x+
1/2*c)^2)/(tan(1/2*d*x+1/2*c)+1)*x/d*tan(1/2*d*x+1/2*c)-1/a*f/(1+tan(1/2*d*
x+1/2*c)^2)/(tan(1/2*d*x+1/2*c)+1)*x/d*tan(1/2*d*x+1/2*c)^3+1/a*f/d^2*ln(1+
tan(1/2*d*x+1/2*c)^2)-2/a*f/d^2*ln(tan(1/2*d*x+1/2*c)+1)
```

maxima [B] time = 0.42, size = 273, normalized size = 3.59

$$-\frac{4\,cf\left(\frac{1}{ad+\frac{ad\sin(dx+c)}{\cos(dx+c)+1}}+\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{ad}\right)-4\,e\left(\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{a}+\frac{1}{a+\frac{a\sin(dx+c)}{\cos(dx+c)+1}}\right)-\frac{\left((dx+c)^2\cos(dx+c)^2+(dx+c)^2\sin(dx+c)^2+2\,(}{}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*(4*c*f*(1/(a*d + a*d*sin(d*x + c)/(cos(d*x + c) + 1)) + arctan(sin(d*x
 + c)/(cos(d*x + c) + 1))/(a*d)) - 4*e*(arctan(sin(d*x + c)/(cos(d*x + c) +
 1))/a + 1/(a + a*sin(d*x + c)/(cos(d*x + c) + 1))) - ((d*x + c)^2*cos(d*x
+ c)^2 + (d*x + c)^2*sin(d*x + c)^2 + 2*(d*x + c)^2*sin(d*x + c) + (d*x + c
)^2 + 4*(d*x + c)*cos(d*x + c) - 2*(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin
(d*x + c) + 1)*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1))*f
/(a*d*cos(d*x + c)^2 + a*d*sin(d*x + c)^2 + 2*a*d*sin(d*x + c) + a*d))/d
```

mupad [B] time = 1.16, size = 80, normalized size = 1.05

$$\frac{f\,x^2}{2\,a}-\frac{2\,f\,\ln\left({\mathrm{e}}^{c\,1{}\mathrm{i}}\,{\mathrm{e}}^{d\,x\,1{}\mathrm{i}}+1{}\mathrm{i}\right)}{a\,d^2}+\frac{2\,\left(e+f\,x\right)}{a\,d\,\left({\mathrm{e}}^{c\,1{}\mathrm{i}+d\,x\,1{}\mathrm{i}}+1{}\mathrm{i}\right)}+\frac{x\,\left(d\,e+f\,2{}\mathrm{i}\right)}{a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x))/(a + a*sin(c + d*x)),x)
```

```
[Out] (f*x^2)/(2*a) - (2*f*log(exp(c*1i)*exp(d*x*1i) + 1i))/(a*d^2) + (2*(e + f*x
))/(a*d*(exp(c*1i + d*x*1i) + 1i)) + (x*(f*2i + d*e))/(a*d)
```

sympy [A] time = 2.00, size = 456, normalized size = 6.00

$$\begin{cases} \frac{2d^2ex\tan\left(\frac{c}{2}+\frac{dx}{2}\right)}{2ad^2\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad^2} + \frac{2d^2ex}{2ad^2\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad^2} + \frac{d^2fx^2\tan\left(\frac{c}{2}+\frac{dx}{2}\right)}{2ad^2\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad^2} + \frac{d^2fx^2}{2ad^2\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad^2} + \frac{4de}{2ad^2\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad^2} - \frac{2dfx\tan}{2ad^2\tan(} \\ \frac{\left(ex+\frac{fx^2}{2}\right)\sin(c)}{a\sin(c)+a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((2*d**2*e*x*tan(c/2 + d*x/2)/(2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**
2) + 2*d**2*e*x/(2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) + d**2*f*x**2*tan(c/
2 + d*x/2)/(2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) + d**2*f*x**2/(2*a*d**2*t
an(c/2 + d*x/2) + 2*a*d**2) + 4*d*e/(2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2)
- 2*d*f*x*tan(c/2 + d*x/2)/(2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) + 2*d*f*x
/(2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 4*f*log(tan(c/2 + d*x/2) + 1)*tan
(c/2 + d*x/2)/(2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 4*f*log(tan(c/2 + d*
x/2) + 1)/(2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) + 2*f*log(tan(c/2 + d*x/2)
**2 + 1)*tan(c/2 + d*x/2)/(2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) + 2*f*log(
tan(c/2 + d*x/2)**2 + 1)/(2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2), Ne(d, 0)),
 ((e*x + f*x**2/2)*sin(c)/(a*sin(c) + a), True))
```

3.182 $\int \frac{\sin(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=28

$$\frac{\cos(c+dx)}{d(a\sin(c+dx)+a)}+\frac{x}{a}$$

```
[Out] x/a+cos(d*x+c)/d/(a+a*sin(d*x+c))
```

Rubi [A] time = 0.04, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2735, 2648}

$$\frac{\cos(c+dx)}{d(a\sin(c+dx)+a)}+\frac{x}{a}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[c + d*x]/(a + a*Sin[c + d*x]),x]
```

```
[Out] x/a + Cos[c + d*x]/(d*(a + a*Sin[c + d*x]))
```

Rule 2648

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> -Simp[Cos[c +
 d*x]/(d*(b + a*Sin[c + d*x])), x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b
^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin(c+dx)}{a+a\sin(c+dx)}\,dx &= \frac{x}{a}-\int \frac{1}{a+a\sin(c+dx)}\,dx\\ &= \frac{x}{a}+\frac{\cos(c+dx)}{d(a+a\sin(c+dx))}\end{aligned}$$

Mathematica [B] time = 0.12, size = 72, normalized size = 2.57

$$\frac{\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)\left((c+dx-2)\sin\left(\frac{1}{2}(c+dx)\right)+(c+dx)\cos\left(\frac{1}{2}(c+dx)\right)\right)}{ad(\sin(c+dx)+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[c + d*x]/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((Cos[(c + d*x)/2] + Sin[(c + d*x)/2])*((c + d*x)*Cos[(c + d*x)/2] + (-2 +
c + d*x)*Sin[(c + d*x)/2]))/(a*d*(1 + Sin[c + d*x]))
```

fricas [A] time = 0.45, size = 54, normalized size = 1.93

$$\frac{dx + (dx + 1)\cos(dx + c) + (dx - 1)\sin(dx + c) + 1}{ad\cos(dx + c) + ad\sin(dx + c) + ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] (d*x + (d*x + 1)*cos(d*x + c) + (d*x - 1)*sin(d*x + c) + 1)/(a*d*cos(d*x +
c) + a*d*sin(d*x + c) + a*d)
```

giac [A] time = 0.85, size = 32, normalized size = 1.14

$$\frac{\frac{dx+c}{a} + \frac{2}{a\left(\tan\left(\frac{1}{2}dx + \frac{1}{2}c\right) + 1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] ((d*x + c)/a + 2/(a*(tan(1/2*d*x + 1/2*c) + 1)))/d
```

maple [A] time = 0.06, size = 41, normalized size = 1.46

$$\frac{2\arctan\left(\tan\left(\frac{dx}{2} + \frac{c}{2}\right)\right)}{ad} + \frac{2}{ad\left(\tan\left(\frac{dx}{2} + \frac{c}{2}\right) + 1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] 2/a/d*arctan(tan(1/2*d*x+1/2*c))+2/a/d/(tan(1/2*d*x+1/2*c)+1)
```

maxima [A] time = 0.41, size = 50, normalized size = 1.79

$$\frac{2\left(\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{a} + \frac{1}{a + \frac{a\sin(dx+c)}{\cos(dx+c)+1}}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 2*(arctan(sin(d*x + c)/(cos(d*x + c) + 1))/a + 1/(a + a*sin(d*x + c)/(cos(d
*x + c) + 1)))/d
```

mupad [B] time = 0.74, size = 27, normalized size = 0.96

$$\frac{x}{a}+\frac{2}{a\,d\,\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)/(a + a*sin(c + d*x)),x)
```

```
[Out] x/a + 2/(a*d*(tan(c/2 + (d*x)/2) + 1))
```

sympy [A] time = 1.61, size = 80, normalized size = 2.86

$$\begin{cases} \frac{dx\tan\left(\frac{c}{2}+\frac{dx}{2}\right)}{ad\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+ad}+\frac{dx}{ad\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+ad}+\frac{2}{ad\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+ad} & \text{for } d\neq 0 \\ \frac{x\sin(c)}{a\sin(c)+a} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((d*x*tan(c/2 + d*x/2)/(a*d*tan(c/2 + d*x/2) + a*d) + d*x/(a*d*tan
(c/2 + d*x/2) + a*d) + 2/(a*d*tan(c/2 + d*x/2) + a*d), Ne(d, 0)), (x*sin(c)
/(a*sin(c) + a), True))
```

3.183 $\int \frac{\sin(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\sin(c+dx)}{(e+fx)(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sin(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sin[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Sin[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sin(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx = \int \frac{\sin(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 9.28, size = 0, normalized size = 0.00

$$\int \frac{\sin(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sin[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Sin[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sin(dx+c)}{afx+ae+\left(afx+ae\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral(sin(d*x + c)/(a*f*x + a*e + (a*f*x + a*e)*sin(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sin\left(dx + c\right)}{\left(fx + e\right)\left(a \sin\left(dx + c\right) + a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] integrate(sin(d*x + c)/((f*x + e)*(a*sin(d*x + c) + a)), x)
```

maple [A] time = 0.28, size = 0, normalized size = 0.00

$$\int \frac{\sin\left(dx + c\right)}{\left(fx + e\right)\left(a + a \sin\left(dx + c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
[Out] int(sin(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sin\left(c + d\,x\right)}{\left(e + f\,x\right)\,\left(a + a\,\sin\left(c + d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)/((e + f*x)*(a + a*sin(c + d*x))),x)
[Out] int(sin(c + d*x)/((e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sin(c+dx)}{e\sin(c+dx)+e+fx\sin(c+dx)+fx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sin(c + d*x)/(e*sin(c + d*x) + e + f*x*sin(c + d*x) + f*x), x)/a
```

3.184 $\int \frac{\sin(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\sin(c+dx)}{(e+fx)^2(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sin(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sin[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Sin[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sin(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx = \int \frac{\sin(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 8.95, size = 0, normalized size = 0.00

$$\int \frac{\sin(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sin[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Sin[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sin(dx+c)}{af^2x^2+2\,aefx+ae^2+\left(af^2x^2+2\,aefx+ae^2\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(sin(d*x + c)/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2 + 2*a*e*f
*x + a*e^2)*sin(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sin(dx+c)}{(fx+e)^2(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sin(d*x + c)/((f*x + e)^2*(a*sin(d*x + c) + a)), x)
```

maple [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\sin(dx+c)}{(fx+e)^2\,(a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int(sin(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sin(c+d\,x)}{(e+f\,x)^2\,(a+a\,\sin(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)/((e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(sin(c + d*x)/((e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sin(c+dx)}{e^2\sin(c+dx)+e^2+2efx\sin(c+dx)+2efx+f^2x^2\sin(c+dx)+f^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sin(c + d*x)/(e**2*sin(c + d*x) + e**2 + 2*e*f*x*sin(c + d*x) + 2*
e*f*x + f**2*x**2*sin(c + d*x) + f**2*x**2), x)/a
```

3.185 $\int \frac{(e+fx)^3 \sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=247

$$\frac{12f^3\text{Li}_3\left(ie^{i(c+dx)}\right)}{ad^4}-\frac{6f^3\sin(c+dx)}{ad^4}-\frac{12if^2(e+fx)\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}+\frac{6f^2(e+fx)\cos(c+dx)}{ad^3}+\frac{6f(e+fx)^2\log\left(1-\right.}{ad^2}$$

```
[Out] -I*(f*x+e)^3/a/d-1/4*(f*x+e)^4/a/f+6*f^2*(f*x+e)*cos(d*x+c)/a/d^3-(f*x+e)^3
*cos(d*x+c)/a/d-(f*x+e)^3*cot(1/2*c+1/4*Pi+1/2*d*x)/a/d+6*f*(f*x+e)^2*ln(1-
I*exp(I*(d*x+c)))/a/d^2-12*I*f^2*(f*x+e)*polylog(2,I*exp(I*(d*x+c)))/a/d^3+
12*f^3*polylog(3,I*exp(I*(d*x+c)))/a/d^4-6*f^3*sin(d*x+c)/a/d^4+3*f*(f*x+e)
^2*sin(d*x+c)/a/d^2
```

Rubi [A] time = 0.47, antiderivative size = 247, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 11, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.393, Rules used = {4515, 3296, 2637, 32, 3318, 4184, 3717, 2190, 2531, 2282, 6589}

$$-\frac{12if^2(e+fx)\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}+\frac{12f^3\text{PolyLog}\left(3,ie^{i(c+dx)}\right)}{ad^4}+\frac{6f^2(e+fx)\cos(c+dx)}{ad^3}+\frac{6f(e+fx)^2\log\left(1-\right.}{ad^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sin[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-I)*(e + f*x)^3)/(a*d) - (e + f*x)^4/(4*a*f) + (6*f^2*(e + f*x)*Cos[c + d
*x])/(a*d^3) - ((e + f*x)^3*Cos[c + d*x])/(a*d) - ((e + f*x)^3*Cot[c/2 + Pi
/4 + (d*x)/2])/(a*d) + (6*f*(e + f*x)^2*Log[1 - I*E^(I*(c + d*x))])/(a*d^2)
 - ((12*I)*f^2*(e + f*x)*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^3) + (12*f^3*P
olyLog[3, I*E^(I*(c + d*x))])/(a*d^4) - (6*f^3*Sin[c + d*x])/(a*d^4) + (3*f
*(e + f*x)^2*Sin[c + d*x])/(a*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\sin^2(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\sin(c+dx)\,dx}{a} - \int \frac{(e+fx)^3\sin(c+dx)}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{\int (e+fx)^3\,dx}{a} + \frac{(3f)\int (e+fx)^2\cos(c+dx)\,dx}{ad} + \int \frac{}{a}$$

$$= -\frac{(e+fx)^4}{4af} - \frac{(e+fx)^3\cos(c+dx)}{ad} + \frac{3f(e+fx)^2\sin(c+dx)}{ad^2} + \frac{\int (e+fx)^3\csc^2}{}$$

$$= -\frac{(e+fx)^4}{4af} + \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} - \frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{(e+fx)^3\cot\left(\frac{c}{2}\right.}{ad}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} + \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} - \frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{(e}{}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} + \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} - \frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{(e}{}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} + \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} - \frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{(e}{}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} + \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} - \frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{(e}{}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} + \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} - \frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{(e}{}$$

Mathematica [B] time = 3.25, size = 1314, normalized size = 5.32

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sin[c + d*x]^2)/(a + a*Sin[c + d*x]),x]

[Out] ((-6 + 4*I)*d^3*e^3*Cos[(c + d*x)/2] + 6*d^2*e^2*f*Cos[(c + d*x)/2] + 12*d*
e*f^2*Cos[(c + d*x)/2] - 12*f^3*Cos[(c + d*x)/2] - 4*d^4*e^3*x*Cos[(c + d*x
)/2] - (18 - 12*I)*d^3*e^2*f*x*Cos[(c + d*x)/2] + 12*d^2*e*f^2*x*Cos[(c + d
*x)/2] + 12*d*f^3*x*Cos[(c + d*x)/2] - 6*d^4*e^2*f*x^2*Cos[(c + d*x)/2] - (
```

```
18 - 12*I)*d^3*e*f^2*x^2*Cos[(c + d*x)/2] + 6*d^2*f^3*x^2*Cos[(c + d*x)/2]
- 4*d^4*e*f^2*x^3*Cos[(c + d*x)/2] - (6 - 4*I)*d^3*f^3*x^3*Cos[(c + d*x)/2]
 - d^4*f^3*x^4*Cos[(c + d*x)/2] - 2*d^3*e^3*Cos[(3*(c + d*x))/2] - 6*d^2*e^
2*f*Cos[(3*(c + d*x))/2] + 12*d*e*f^2*Cos[(3*(c + d*x))/2] + 12*f^3*Cos[(3*
(c + d*x))/2] - 6*d^3*e^2*f*x*Cos[(3*(c + d*x))/2] - 12*d^2*e*f^2*x*Cos[(3*
(c + d*x))/2] + 12*d*f^3*x*Cos[(3*(c + d*x))/2] - 6*d^3*e*f^2*x^2*Cos[(3*(c
 + d*x))/2] - 6*d^2*f^3*x^2*Cos[(3*(c + d*x))/2] - 2*d^3*f^3*x^3*Cos[(3*(c
+ d*x))/2] + 24*d^2*e^2*f*Cos[(c + d*x)/2]*Log[1 + I*Cos[c + d*x] + Sin[c +
 d*x]] + 48*d^2*e*f^2*x*Cos[(c + d*x)/2]*Log[1 + I*Cos[c + d*x] + Sin[c + d
*x]] + 24*d^2*f^3*x^2*Cos[(c + d*x)/2]*Log[1 + I*Cos[c + d*x] + Sin[c + d*x
]] + (6 + 4*I)*d^3*e^3*Sin[(c + d*x)/2] + 6*d^2*e^2*f*Sin[(c + d*x)/2] - 12
*d*e*f^2*Sin[(c + d*x)/2] - 12*f^3*Sin[(c + d*x)/2] - 4*d^4*e^3*x*Sin[(c +
d*x)/2] + (18 + 12*I)*d^3*e^2*f*x*Sin[(c + d*x)/2] + 12*d^2*e*f^2*x*Sin[(c
+ d*x)/2] - 12*d*f^3*x*Sin[(c + d*x)/2] - 6*d^4*e^2*f*x^2*Sin[(c + d*x)/2]
+ (18 + 12*I)*d^3*e*f^2*x^2*Sin[(c + d*x)/2] + 6*d^2*f^3*x^2*Sin[(c + d*x)/
2] - 4*d^4*e*f^2*x^3*Sin[(c + d*x)/2] + (6 + 4*I)*d^3*f^3*x^3*Sin[(c + d*x)
/2] - d^4*f^3*x^4*Sin[(c + d*x)/2] + 24*d^2*e^2*f*Log[1 + I*Cos[c + d*x] +
Sin[c + d*x]]*Sin[(c + d*x)/2] + 48*d^2*e*f^2*x*Log[1 + I*Cos[c + d*x] + Si
n[c + d*x]]*Sin[(c + d*x)/2] + 24*d^2*f^3*x^2*Log[1 + I*Cos[c + d*x] + Sin[
c + d*x]]*Sin[(c + d*x)/2] + (48*I)*d*f^2*(e + f*x)*PolyLog[2, (-I)*Cos[c +
 d*x] - Sin[c + d*x]]*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) + 48*f^3*PolyLo
g[3, (-I)*Cos[c + d*x] - Sin[c + d*x]]*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]
) - 2*d^3*e^3*Sin[(3*(c + d*x))/2] + 6*d^2*e^2*f*Sin[(3*(c + d*x))/2] + 12*
d*e*f^2*Sin[(3*(c + d*x))/2] - 12*f^3*Sin[(3*(c + d*x))/2] - 6*d^3*e^2*f*x*
Sin[(3*(c + d*x))/2] + 12*d^2*e*f^2*x*Sin[(3*(c + d*x))/2] + 12*d*f^3*x*Sin
[(3*(c + d*x))/2] - 6*d^3*e*f^2*x^2*Sin[(3*(c + d*x))/2] + 6*d^2*f^3*x^2*Si
n[(3*(c + d*x))/2] - 2*d^3*f^3*x^3*Sin[(3*(c + d*x))/2])/(4*a*d^4*(Cos[(c +
 d*x)/2] + Sin[(c + d*x)/2]))
```

fricas [C] time = 0.57, size = 1313, normalized size = 5.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(d^4*f^3*x^4 + 4*d^3*e^3 - 12*d^2*e^2*f + 4*(d^4*e*f^2 + d^3*f^3)*x^3
+ 24*f^3 + 6*(d^4*e^2*f + 2*d^3*e*f^2 - 2*d^2*f^3)*x^2 + 4*(d^3*f^3*x^3 + d
^3*e^3 + 3*d^2*e^2*f - 6*d*e*f^2 - 6*f^3 + 3*(d^3*e*f^2 + d^2*f^3)*x^2 + 3*
(d^3*e^2*f + 2*d^2*e*f^2 - 2*d*f^3)*x)*cos(d*x + c)^2 + 4*(d^4*e^3 + 3*d^3*
e^2*f - 6*d^2*e*f^2)*x + (d^4*f^3*x^4 + 8*d^3*e^3 - 24*d*e*f^2 + 4*(d^4*e*f
^2 + 2*d^3*f^3)*x^3 + 6*(d^4*e^2*f + 4*d^3*e*f^2)*x^2 + 4*(d^4*e^3 + 6*d^3*
e^2*f - 6*d*f^3)*x)*cos(d*x + c) - (-24*I*d*f^3*x - 24*I*d*e*f^2 + (-24*I*d
*f^3*x - 24*I*d*e*f^2)*cos(d*x + c) + (-24*I*d*f^3*x - 24*I*d*e*f^2)*sin(d*
x + c))*dilog(I*cos(d*x + c) - sin(d*x + c)) - (24*I*d*f^3*x + 24*I*d*e*f^2
```

```
 + (24*I*d*f^3*x + 24*I*d*e*f^2)*cos(d*x + c) + (24*I*d*f^3*x + 24*I*d*e*f^
2)*sin(d*x + c))*dilog(-I*cos(d*x + c) - sin(d*x + c)) - 12*(d^2*e^2*f - 2*
c*d*e*f^2 + c^2*f^3 + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c) + (d
^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*
x + c) + I) - 12*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3 + (d^
2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c) + (d^2*f^3*
x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*sin(d*x + c))*log(I*cos(d*x +
c) + sin(d*x + c) + 1) - 12*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^
2*f^3 + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c)
+ (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*sin(d*x + c))*log(-
I*cos(d*x + c) + sin(d*x + c) + 1) - 12*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3
+ (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c) + (d^2*e^2*f - 2*c*d*e*f
^2 + c^2*f^3)*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + I) - 24*(f
^3*cos(d*x + c) + f^3*sin(d*x + c) + f^3)*polylog(3, I*cos(d*x + c) - sin(d
*x + c)) - 24*(f^3*cos(d*x + c) + f^3*sin(d*x + c) + f^3)*polylog(3, -I*cos
(d*x + c) - sin(d*x + c)) + (d^4*f^3*x^4 - 4*d^3*e^3 - 12*d^2*e^2*f + 4*(d^
4*e*f^2 - d^3*f^3)*x^3 + 24*f^3 + 6*(d^4*e^2*f - 2*d^3*e*f^2 - 2*d^2*f^3)*x
^2 + 4*(d^4*e^3 - 3*d^3*e^2*f - 6*d^2*e*f^2)*x + 4*(d^3*f^3*x^3 + d^3*e^3 -
 3*d^2*e^2*f - 6*d*e*f^2 + 6*f^3 + 3*(d^3*e*f^2 - d^2*f^3)*x^2 + 3*(d^3*e^2
*f - 2*d^2*e*f^2 - 2*d*f^3)*x)*cos(d*x + c))*sin(d*x + c))/(a*d^4*cos(d*x +
 c) + a*d^4*sin(d*x + c) + a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sin\left(dx+c\right)^{2}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sin(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.44, size = 748, normalized size = 3.03

$$-\frac{f^3x^4}{4a}-\frac{e^3x}{a}-\frac{\left(f^3x^3d^3+3d^3ef^2x^2+3id^2f^3x^2+3d^3e^2fx+6id^2ef^2x+d^3e^3+3id^2e^2f-6df^3x-6f^2ed-6if^3\right)}{2a\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sin(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] 12/a/d^2*f^2*e*ln(1-I*exp(I*(d*x+c)))*x+12/a/d^3*f^2*e*ln(1-I*exp(I*(d*x+c)
))*c+12/a/d^3*f^2*e*c*ln(exp(I*(d*x+c)))-12*I/a/d^2*e*f^2*c*x-2*I/a/d*f^3*x
^3+4*I/a/d^4*f^3*c^3-1/4/a*f^3*x^4-1/a*e^3*x-2*(f^3*x^3+3*e*f^2*x^2+3*e^2*f
```

```
*x+e^3)/d/a/(exp(I*(d*x+c))+I)-1/a*e*f^2*x^3-3/2/a*e^2*f*x^2-6/a/d^2*f*ln(e
xp(I*(d*x+c)))*e^2-6/a/d^4*f^3*c^2*ln(exp(I*(d*x+c)))+6/a/d^4*f^3*c^2*ln(ex
p(I*(d*x+c))+I)+6/a/d^2*f*ln(exp(I*(d*x+c))+I)*e^2-1/2*(f^3*x^3*d^3+3*I*d^2
*f^3*x^2+3*d^3*e*f^2*x^2+6*I*d^2*e*f^2*x+3*d^3*e^2*f*x+3*I*d^2*e^2*f+d^3*e^
3-6*d*f^3*x-6*I*f^3-6*f^2*e*d)/a/d^4*exp(I*(d*x+c))+6*I/a/d^3*f^3*c^2*x-12*
I/a/d^3*f^3*polylog(2,I*exp(I*(d*x+c)))*x-6*I/a/d*e*f^2*x^2-6*I/a/d^3*e*f^2
*c^2-12*I/a/d^3*e*f^2*polylog(2,I*exp(I*(d*x+c)))+6/a/d^2*f^3*ln(1-I*exp(I*
(d*x+c)))*x^2-1/2*(f^3*x^3*d^3-3*I*d^2*f^3*x^2+3*d^3*e*f^2*x^2-6*I*d^2*e*f^
2*x+3*d^3*e^2*f*x-3*I*d^2*e^2*f+d^3*e^3-6*d*f^3*x+6*I*f^3-6*f^2*e*d)/a/d^4*
exp(-I*(d*x+c))+12*f^3*polylog(3,I*exp(I*(d*x+c)))/a/d^4-6/a/d^4*f^3*ln(1-I
*exp(I*(d*x+c)))*c^2-12/a/d^3*f^2*e*c*ln(exp(I*(d*x+c))+I)
```

maxima [B] time = 1.97, size = 4598, normalized size = 18.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*(12*c^2*e*f^2*((sin(d*x + c)/(cos(d*x + c) + 1) + sin(d*x + c)^2/(cos(
d*x + c) + 1)^2 + 2)/(a*d^2 + a*d^2*sin(d*x + c)/(cos(d*x + c) + 1) + a*d^2
*sin(d*x + c)^2/(cos(d*x + c) + 1)^2 + a*d^2*sin(d*x + c)^3/(cos(d*x + c) +
 1)^3) + arctan(sin(d*x + c)/(cos(d*x + c) + 1))/(a*d^2)) - 12*c*e^2*f*((si
n(d*x + c)/(cos(d*x + c) + 1) + sin(d*x + c)^2/(cos(d*x + c) + 1)^2 + 2)/(a
*d + a*d*sin(d*x + c)/(cos(d*x + c) + 1) + a*d*sin(d*x + c)^2/(cos(d*x + c)
 + 1)^2 + a*d*sin(d*x + c)^3/(cos(d*x + c) + 1)^3) + arctan(sin(d*x + c)/(c
os(d*x + c) + 1))/(a*d)) - 6*(((d*x + c)^2 - 1)*cos(d*x + c)^4 + ((d*x + c)
^2 - 1)*sin(d*x + c)^4 + ((d*x + c)*cos(d*x + c) + sin(d*x + c) + 1)*cos(2*
d*x + 2*c)^3 + 7*(d*x + c)*cos(d*x + c)^3 + (d*x + (d*x + c)*sin(d*x + c) +
 c - cos(d*x + c))*sin(2*d*x + 2*c)^3 + (2*(d*x + c)^2 - 3)*sin(d*x + c)^3
+ (((d*x + c)^2 - 1)*cos(d*x + c)^2 + ((d*x + c)^2 - 3)*sin(d*x + c)^2 + (d
*x + c)^2 + 6*(d*x + c)*cos(d*x + c) + 2*((d*x + c)^2 - (d*x + c)*cos(d*x +
 c) - 2)*sin(d*x + c) - 1)*cos(2*d*x + 2*c)^2 + ((d*x + c)^2 - 1)*cos(d*x +
 c)^2 + (((d*x + c)^2 - 3)*cos(d*x + c)^2 + ((d*x + c)^2 - 1)*sin(d*x + c)^
2 + (d*x + c)^2 + ((d*x + c)*cos(d*x + c) + sin(d*x + c) + 1)*cos(2*d*x + 2
*c) + 8*(d*x + c)*cos(d*x + c) + 2*((d*x + c)^2 + (d*x + c)*cos(d*x + c) -
1)*sin(d*x + c) - 1)*sin(2*d*x + 2*c)^2 + (2*((d*x + c)^2 - 1)*cos(d*x + c)
^2 + (d*x + c)^2 + 7*(d*x + c)*cos(d*x + c) - 3)*sin(d*x + c)^2 + ((d*x + c
)*cos(d*x + c)^3 - (2*(d*x + c)^2 - 3)*sin(d*x + c)^3 - (4*(d*x + c)^2 - (d
*x + c)*cos(d*x + c) - 6)*sin(d*x + c)^2 + 2*cos(d*x + c)^2 - ((2*(d*x + c)
^2 - 3)*cos(d*x + c)^2 + 2*(d*x + c)^2 + 12*(d*x + c)*cos(d*x + c) - 4)*sin
(d*x + c) + 1)*cos(2*d*x + 2*c) + (d*x + c)*cos(d*x + c) - 2*(cos(d*x + c)^
4 + sin(d*x + c)^4 + (cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1)
*cos(2*d*x + 2*c)^2 + (cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1
)*sin(2*d*x + 2*c)^2 + 2*cos(d*x + c)^2*sin(d*x + c) + (2*cos(d*x + c)^2 +
```

```
1)*sin(d*x + c)^2 + 2*sin(d*x + c)^3 - 2*(sin(d*x + c)^3 + (cos(d*x + c)^2
+ 1)*sin(d*x + c) + 2*sin(d*x + c)^2)*cos(2*d*x + 2*c) + cos(d*x + c)^2 + 2
*(cos(d*x + c)^3 + cos(d*x + c)*sin(d*x + c)^2 + 2*cos(d*x + c)*sin(d*x + c
) + cos(d*x + c))*sin(2*d*x + 2*c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2
*sin(d*x + c) + 1) + ((2*(d*x + c)^2 - 3)*cos(d*x + c)^3 + (d*x + c)*sin(d*
x + c)^3 + (d*x + (d*x + c)*sin(d*x + c) + c - cos(d*x + c))*cos(2*d*x + 2*
c)^2 + 14*(d*x + c)*cos(d*x + c)^2 + (2*d*x + (2*(d*x + c)^2 - 3)*cos(d*x +
 c) + 2*c)*sin(d*x + c)^2 + d*x + 2*((d*x + c)*cos(d*x + c)^2 - (d*x + c)*s
in(d*x + c)^2 - (d*x + c - 2*cos(d*x + c))*sin(d*x + c) + cos(d*x + c))*cos
(2*d*x + 2*c) + 2*((d*x + c)^2 - 1)*cos(d*x + c) + ((d*x + c)*cos(d*x + c)^
2 + 2*d*x + 4*((d*x + c)^2 - 1)*cos(d*x + c) + 2*c)*sin(d*x + c) + c)*sin(2
*d*x + 2*c) + ((2*(d*x + c)^2 - 3)*cos(d*x + c)^2 + 2*(d*x + c)*cos(d*x + c
) - 1)*sin(d*x + c))*c*e*f^2/(a*d^2*cos(d*x + c)^4 + a*d^2*sin(d*x + c)^4 +
 2*a*d^2*cos(d*x + c)^2*sin(d*x + c) + 2*a*d^2*sin(d*x + c)^3 + a*d^2*cos(d
*x + c)^2 + (a*d^2*cos(d*x + c)^2 + a*d^2*sin(d*x + c)^2 + 2*a*d^2*sin(d*x
+ c) + a*d^2)*cos(2*d*x + 2*c)^2 + (a*d^2*cos(d*x + c)^2 + a*d^2*sin(d*x +
c)^2 + 2*a*d^2*sin(d*x + c) + a*d^2)*sin(2*d*x + 2*c)^2 + (2*a*d^2*cos(d*x
+ c)^2 + a*d^2)*sin(d*x + c)^2 - 2*(a*d^2*sin(d*x + c)^3 + 2*a*d^2*sin(d*x
+ c)^2 + (a*d^2*cos(d*x + c)^2 + a*d^2)*sin(d*x + c))*cos(2*d*x + 2*c) + 2*
(a*d^2*cos(d*x + c)^3 + a*d^2*cos(d*x + c)*sin(d*x + c)^2 + 2*a*d^2*cos(d*x
 + c)*sin(d*x + c) + a*d^2*cos(d*x + c))*sin(2*d*x + 2*c)) + 4*e^3*((sin(d*
x + c)/(cos(d*x + c) + 1) + sin(d*x + c)^2/(cos(d*x + c) + 1)^2 + 2)/(a + a
*sin(d*x + c)/(cos(d*x + c) + 1) + a*sin(d*x + c)^2/(cos(d*x + c) + 1)^2 +
a*sin(d*x + c)^3/(cos(d*x + c) + 1)^3) + arctan(sin(d*x + c)/(cos(d*x + c)
+ 1))/a) + 3*(((d*x + c)^2 - 1)*cos(d*x + c)^4 + ((d*x + c)^2 - 1)*sin(d*x
+ c)^4 + ((d*x + c)*cos(d*x + c) + sin(d*x + c) + 1)*cos(2*d*x + 2*c)^3 + 7
*(d*x + c)*cos(d*x + c)^3 + (d*x + (d*x + c)*sin(d*x + c) + c - cos(d*x + c
))*sin(2*d*x + 2*c)^3 + (2*(d*x + c)^2 - 3)*sin(d*x + c)^3 + (((d*x + c)^2
- 1)*cos(d*x + c)^2 + ((d*x + c)^2 - 3)*sin(d*x + c)^2 + (d*x + c)^2 + 6*(d
*x + c)*cos(d*x + c) + 2*((d*x + c)^2 - (d*x + c)*cos(d*x + c) - 2)*sin(d*x
 + c) - 1)*cos(2*d*x + 2*c)^2 + ((d*x + c)^2 - 1)*cos(d*x + c)^2 + (((d*x +
 c)^2 - 3)*cos(d*x + c)^2 + ((d*x + c)^2 - 1)*sin(d*x + c)^2 + (d*x + c)^2
+ ((d*x + c)*cos(d*x + c) + sin(d*x + c) + 1)*cos(2*d*x + 2*c) + 8*(d*x + c
)*cos(d*x + c) + 2*((d*x + c)^2 + (d*x + c)*cos(d*x + c) - 1)*sin(d*x + c)
- 1)*sin(2*d*x + 2*c)^2 + (2*((d*x + c)^2 - 1)*cos(d*x + c)^2 + (d*x + c)^2
 + 7*(d*x + c)*cos(d*x + c) - 3)*sin(d*x + c)^2 + ((d*x + c)*cos(d*x + c)^3
 - (2*(d*x + c)^2 - 3)*sin(d*x + c)^3 - (4*(d*x + c)^2 - (d*x + c)*cos(d*x
+ c) - 6)*sin(d*x + c)^2 + 2*cos(d*x + c)^2 - ((2*(d*x + c)^2 - 3)*cos(d*x
+ c)^2 + 2*(d*x + c)^2 + 12*(d*x + c)*cos(d*x + c) - 4)*sin(d*x + c) + 1)*c
os(2*d*x + 2*c) + (d*x + c)*cos(d*x + c) - 2*(cos(d*x + c)^4 + sin(d*x + c)
^4 + (cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1)*cos(2*d*x + 2*c
)^2 + (cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1)*sin(2*d*x + 2*
c)^2 + 2*cos(d*x + c)^2*sin(d*x + c) + (2*cos(d*x + c)^2 + 1)*sin(d*x + c)^
2 + 2*sin(d*x + c)^3 - 2*(sin(d*x + c)^3 + (cos(d*x + c)^2 + 1)*sin(d*x + c
) + 2*sin(d*x + c)^2)*cos(2*d*x + 2*c) + cos(d*x + c)^2 + 2*(cos(d*x + c)^3
```

```
 + cos(d*x + c)*sin(d*x + c)^2 + 2*cos(d*x + c)*sin(d*x + c) + cos(d*x + c)
)*sin(2*d*x + 2*c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) +
1) + ((2*(d*x + c)^2 - 3)*cos(d*x + c)^3 + (d*x + c)*sin(d*x + c)^3 + (d*x
+ (d*x + c)*sin(d*x + c) + c - cos(d*x + c))*cos(2*d*x + 2*c)^2 + 14*(d*x +
 c)*cos(d*x + c)^2 + (2*d*x + (2*(d*x + c)^2 - 3)*cos(d*x + c) + 2*c)*sin(d
*x + c)^2 + d*x + 2*((d*x + c)*cos(d*x + c)^2 - (d*x + c)*sin(d*x + c)^2 -
(d*x + c - 2*cos(d*x + c))*sin(d*x + c) + cos(d*x + c))*cos(2*d*x + 2*c) +
2*((d*x + c)^2 - 1)*cos(d*x + c) + ((d*x + c)*cos(d*x + c)^2 + 2*d*x + 4*((
d*x + c)^2 - 1)*cos(d*x + c) + 2*c)*sin(d*x + c) + c)*sin(2*d*x + 2*c) + ((
2*(d*x + c)^2 - 3)*cos(d*x + c)^2 + 2*(d*x + c)*cos(d*x + c) - 1)*sin(d*x +
 c))*e^2*f/(a*d*cos(d*x + c)^4 + a*d*sin(d*x + c)^4 + 2*a*d*cos(d*x + c)^2*
sin(d*x + c) + 2*a*d*sin(d*x + c)^3 + a*d*cos(d*x + c)^2 + (a*d*cos(d*x + c
)^2 + a*d*sin(d*x + c)^2 + 2*a*d*sin(d*x + c) + a*d)*cos(2*d*x + 2*c)^2 + (
a*d*cos(d*x + c)^2 + a*d*sin(d*x + c)^2 + 2*a*d*sin(d*x + c) + a*d)*sin(2*d
*x + 2*c)^2 + (2*a*d*cos(d*x + c)^2 + a*d)*sin(d*x + c)^2 - 2*(a*d*sin(d*x
+ c)^3 + 2*a*d*sin(d*x + c)^2 + (a*d*cos(d*x + c)^2 + a*d)*sin(d*x + c))*co
s(2*d*x + 2*c) + 2*(a*d*cos(d*x + c)^3 + a*d*cos(d*x + c)*sin(d*x + c)^2 +
2*a*d*cos(d*x + c)*sin(d*x + c) + a*d*cos(d*x + c))*sin(2*d*x + 2*c)) + 2*(
(d*x + c)^4*f^3 + (4*d*e*f^2 - (4*c + 2*I)*f^3)*(d*x + c)^3 + 12*I*d*e*f^2
- (-10*I*c^3 + 6*c^2 + 12*I*c - 12)*f^3 + 6*(-I*d*e*f^2 + (c^2 + I*c - 1)*f
^3)*(d*x + c)^2 - (12*d*e*f^2 + (4*c^3 + 6*I*c^2 - 12*c - 12*I)*f^3)*(d*x +
 c) - (24*c^2*f^3*cos(d*x + c) + 24*I*c^2*f^3*sin(d*x + c) + 24*I*c^2*f^3)*
arctan2(sin(d*x + c) + 1, cos(d*x + c)) - (-24*I*(d*x + c)^2*f^3 + (-48*I*d
*e*f^2 + 48*I*c*f^3)*(d*x + c) - 24*((d*x + c)^2*f^3 + 2*(d*e*f^2 - c*f^3)*
(d*x + c))*cos(d*x + c) + (-24*I*(d*x + c)^2*f^3 + (-48*I*d*e*f^2 + 48*I*c*
f^3)*(d*x + c))*sin(d*x + c))*arctan2(cos(d*x + c), sin(d*x + c) + 1) - (2*
I*(d*x + c)^3*f^3 - 12*I*d*e*f^2 + (-2*I*c^3 - 6*c^2 + 12*I*c + 12)*f^3 + (
6*I*d*e*f^2 - 6*(I*c + 1)*f^3)*(d*x + c)^2 - (12*d*e*f^2 - (6*I*c^2 + 12*c
- 12*I)*f^3)*(d*x + c))*cos(2*d*x + 2*c) - (I*(d*x + c)^4*f^3 - 2*(-2*I*d*e
*f^2 + (2*I*c + 5)*f^3)*(d*x + c)^3 + 12*d*e*f^2 + (2*c^3 - 6*I*c^2 - 12*c
+ 12*I)*f^3 - (30*d*e*f^2 - (6*I*c^2 + 30*c - 6*I)*f^3)*(d*x + c)^2 + (-12*
I*d*e*f^2 + (-4*I*c^3 - 30*c^2 + 12*I*c + 12)*f^3)*(d*x + c))*cos(d*x + c)
- (-48*I*d*e*f^2 - 48*I*(d*x + c)*f^3 + 48*I*c*f^3 - 48*(d*e*f^2 + (d*x + c
)*f^3 - c*f^3)*cos(d*x + c) + (-48*I*d*e*f^2 - 48*I*(d*x + c)*f^3 + 48*I*c*
f^3)*sin(d*x + c))*dilog(I*e^(I*d*x + I*c)) - (12*(d*x + c)^2*f^3 + 12*c^2*
f^3 + 24*(d*e*f^2 - c*f^3)*(d*x + c) + (-12*I*(d*x + c)^2*f^3 - 12*I*c^2*f^
3 + (-24*I*d*e*f^2 + 24*I*c*f^3)*(d*x + c))*cos(d*x + c) + 12*((d*x + c)^2*
f^3 + c^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*sin(d*x + c))*log(cos(d*x +
c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) + 48*(I*f^3*cos(d*x + c) - f^3*
sin(d*x + c) - f^3)*polylog(3, I*e^(I*d*x + I*c)) + (2*(d*x + c)^3*f^3 - 12
*d*e*f^2 - (2*c^3 - 6*I*c^2 - 12*c + 12*I)*f^3 + (6*d*e*f^2 - (6*c - 6*I)*f
^3)*(d*x + c)^2 + 6*(2*I*d*e*f^2 + (c^2 - 2*I*c - 2)*f^3)*(d*x + c))*sin(2*
d*x + 2*c) + ((d*x + c)^4*f^3 + (4*d*e*f^2 - (4*c - 10*I)*f^3)*(d*x + c)^3
- 12*I*d*e*f^2 - (2*I*c^3 + 6*c^2 - 12*I*c - 12)*f^3 + 6*(5*I*d*e*f^2 + (c^
2 - 5*I*c - 1)*f^3)*(d*x + c)^2 - (12*d*e*f^2 + (4*c^3 - 30*I*c^2 - 12*c +
```

```
12*I)*f^3)*(d*x + c))*sin(d*x + c))/(-4*I*a*d^3*cos(d*x + c) + 4*a*d^3*sin(
d*x + c) + 4*a*d^3))/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sin(c+d\,x)^2\,\left(e+f\,x\right)^3}{a+a\,\sin(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^2*(e + f*x)^3)/(a + a*sin(c + d*x)),x)
```

```
[Out] int((sin(c + d*x)^2*(e + f*x)^3)/(a + a*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^3\sin^2(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{f^3x^3\sin^2(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{3ef^2x^2\sin^2(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{3e^2fx\sin^2(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sin(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**3*sin(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(f**3*x**3*
sin(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(3*e*f**2*x**2*sin(c + d*x
)**2/(sin(c + d*x) + 1), x) + Integral(3*e**2*f*x*sin(c + d*x)**2/(sin(c +
d*x) + 1), x))/a
```

3.186 $\int \frac{(e+fx)^2\sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=188

$$-\frac{4if^2\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}+\frac{2f^2\cos(c+dx)}{ad^3}+\frac{4f(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad^2}+\frac{2f(e+fx)\sin(c+dx)}{ad^2}-\frac{(e+fx)^2\cos(c+d}{ad}$$

```
[Out] -I*(f*x+e)^2/a/d-1/3*(f*x+e)^3/a/f+2*f^2*cos(d*x+c)/a/d^3-(f*x+e)^2*cos(d*x
+c)/a/d-(f*x+e)^2*cot(1/2*c+1/4*Pi+1/2*d*x)/a/d+4*f*(f*x+e)*ln(1-I*exp(I*(d
*x+c)))/a/d^2-4*I*f^2*polylog(2,I*exp(I*(d*x+c)))/a/d^3+2*f*(f*x+e)*sin(d*x
+c)/a/d^2
```

Rubi [A] time = 0.35, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4515, 3296, 2638, 32, 3318, 4184, 3717, 2190, 2279, 2391}

$$-\frac{4if^2\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}+\frac{4f(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad^2}+\frac{2f(e+fx)\sin(c+dx)}{ad^2}+\frac{2f^2\cos(c+dx)}{ad^3}-\frac{(e+fx)^2\text{c}}{a\text{c}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sin[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-I)*(e + f*x)^2)/(a*d) - (e + f*x)^3/(3*a*f) + (2*f^2*Cos[c + d*x])/(a*d^
3) - ((e + f*x)^2*Cos[c + d*x])/(a*d) - ((e + f*x)^2*Cot[c/2 + Pi/4 + (d*x)
/2])/(a*d) + (4*f*(e + f*x)*Log[1 - I*E^(I*(c + d*x))])/(a*d^2) - ((4*I)*f^
2*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^3) + (2*f*(e + f*x)*Sin[c + d*x])/(a*
d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2\sin^2(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\sin(c+dx)\,dx}{a} - \int \frac{(e+fx)^2\sin(c+dx)}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{(e+fx)^2\cos(c+dx)}{ad} - \frac{\int (e+fx)^2\,dx}{a} + \frac{(2f)\int (e+fx)\cos(c+dx)\,dx}{ad} + \int \frac{}{a+}$$

$$= -\frac{(e+fx)^3}{3af} - \frac{(e+fx)^2\cos(c+dx)}{ad} + \frac{2f(e+fx)\sin(c+dx)}{ad^2} + \frac{\int (e+fx)^2\csc^2\left(\frac{1}{2}\right.}{2}$$

$$= -\frac{(e+fx)^3}{3af} + \frac{2f^2\cos(c+dx)}{ad^3} - \frac{(e+fx)^2\cos(c+dx)}{ad} - \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right.}{ad}$$

$$= -\frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{3af} + \frac{2f^2\cos(c+dx)}{ad^3} - \frac{(e+fx)^2\cos(c+dx)}{ad} - \frac{(e+fx)^2\,\mathrm{co}}{}$$

$$= -\frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{3af} + \frac{2f^2\cos(c+dx)}{ad^3} - \frac{(e+fx)^2\cos(c+dx)}{ad} - \frac{(e+fx)^2\,\mathrm{co}}{}$$

$$= -\frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{3af} + \frac{2f^2\cos(c+dx)}{ad^3} - \frac{(e+fx)^2\cos(c+dx)}{ad} - \frac{(e+fx)^2\,\mathrm{co}}{}$$

$$= -\frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{3af} + \frac{2f^2\cos(c+dx)}{ad^3} - \frac{(e+fx)^2\cos(c+dx)}{ad} - \frac{(e+fx)^2\,\mathrm{co}}{}$$

Mathematica [A] time = 2.76, size = 295, normalized size = 1.57

$$-\frac{\frac{12f(\cos(c)+i\sin(c))\left(\frac{f(\cos(c)-i(\sin(c)+1))\mathrm{Li}_2(-i\cos(c+dx)-\sin(c+dx))}{d^2}-\frac{(\sin(c)+i\cos(c)+1)(e+fx)\log(\sin(c+dx)+i\cos(c+dx)+1)}{d}+\frac{(\cos(c)-i\sin(c))(e+fx)^2}{2f}\right)}{d(\cos(c)+i(\sin(c)+1))}+\frac{3\cos(dx}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sin[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] -1/3*(x*(3*e^2 + 3*e*f*x + f^2*x^2) + (3*Cos[d*x]*((-2*f^2 + d^2*(e + f*x)^
2)*Cos[c] - 2*d*f*(e + f*x)*Sin[c]))/d^3 + (12*f*(Cos[c] + I*Sin[c])*(((e +
 f*x)^2*(Cos[c] - I*Sin[c]))/(2*f) - ((e + f*x)*Log[1 + I*Cos[c + d*x] + Si
n[c + d*x]]*(1 + I*Cos[c] + Sin[c]))/d + (f*PolyLog[2, (-I)*Cos[c + d*x] -
Sin[c + d*x]]*(Cos[c] - I*(1 + Sin[c])))/d^2))/(d*(Cos[c] + I*(1 + Sin[c]))
) - (3*(2*d*f*(e + f*x)*Cos[c] + (-2*f^2 + d^2*(e + f*x)^2)*Sin[c])*Sin[d*x
])/d^3 - (6*(e + f*x)^2*Sin[(d*x)/2])/(d*(Cos[c/2] + Sin[c/2])*(Cos[(c + d*
x)/2] + Sin[(c + d*x)/2])))/a
```

fricas [B] time = 0.52, size = 716, normalized size = 3.81

$$-\frac{d^3 f^2 x^3 + 3\,d^2 e^2 - 6\,d e f + 3\left(d^3 e f + d^2 f^2\right)x^2 + 3\left(d^2 f^2 x^2 + d^2 e^2 + 2\,d e f - 2\,f^2 + 2\left(d^2 e f + d f^2\right)x\right)\cos\left(dx + c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/3*(d^3*f^2*x^3 + 3*d^2*e^2 - 6*d*e*f + 3*(d^3*e*f + d^2*f^2)*x^2 + 3*(d^
2*f^2*x^2 + d^2*e^2 + 2*d*e*f - 2*f^2 + 2*(d^2*e*f + d*f^2)*x)*cos(d*x + c)
^2 + 3*(d^3*e^2 + 2*d^2*e*f - 2*d*f^2)*x + (d^3*f^2*x^3 + 6*d^2*e^2 + 3*(d^
3*e*f + 2*d^2*f^2)*x^2 - 6*f^2 + 3*(d^3*e^2 + 4*d^2*e*f)*x)*cos(d*x + c) -
(-6*I*f^2*cos(d*x + c) - 6*I*f^2*sin(d*x + c) - 6*I*f^2)*dilog(I*cos(d*x +
c) - sin(d*x + c)) - (6*I*f^2*cos(d*x + c) + 6*I*f^2*sin(d*x + c) + 6*I*f^2
)*dilog(-I*cos(d*x + c) - sin(d*x + c)) - 6*(d*e*f - c*f^2 + (d*e*f - c*f^2
)*cos(d*x + c) + (d*e*f - c*f^2)*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x
 + c) + I) - 6*(d*f^2*x + c*f^2 + (d*f^2*x + c*f^2)*cos(d*x + c) + (d*f^2*x
 + c*f^2)*sin(d*x + c))*log(I*cos(d*x + c) + sin(d*x + c) + 1) - 6*(d*f^2*x
 + c*f^2 + (d*f^2*x + c*f^2)*cos(d*x + c) + (d*f^2*x + c*f^2)*sin(d*x + c))
*log(-I*cos(d*x + c) + sin(d*x + c) + 1) - 6*(d*e*f - c*f^2 + (d*e*f - c*f^
2)*cos(d*x + c) + (d*e*f - c*f^2)*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d
*x + c) + I) + (d^3*f^2*x^3 - 3*d^2*e^2 - 6*d*e*f + 3*(d^3*e*f - d^2*f^2)*x
^2 + 3*(d^3*e^2 - 2*d^2*e*f - 2*d*f^2)*x + 3*(d^2*f^2*x^2 + d^2*e^2 - 2*d*e
*f - 2*f^2 + 2*(d^2*e*f - d*f^2)*x)*cos(d*x + c))*sin(d*x + c))/(a*d^3*cos(
d*x + c) + a*d^3*sin(d*x + c) + a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx + e\right)^2 \sin\left(dx + c\right)^2}{a \sin\left(dx + c\right) + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sin(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.56, size = 408, normalized size = 2.17

$$-\frac{f^2x^3}{3a}-\frac{fe\,x^2}{a}-\frac{e^2x}{a}-\frac{\left(f^2x^2d^2+2d^2efx+2id\,f^2x+d^2e^2+2idef-2f^2\right)\mathrm{e}^{i(dx+c)}}{2d^3a}-\frac{\left(f^2x^2d^2+2d^2efx-2id\,f^2x+d^2\right.}{2d^3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sin(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/3/a*f^2*x^3-1/a*f*e*x^2-1/a*e^2*x-1/2*(f^2*x^2*d^2+2*I*d*f^2*x+2*d^2*e*f
*x+2*I*d*e*f+d^2*e^2-2*f^2)/d^3/a*exp(I*(d*x+c))-1/2*(f^2*x^2*d^2-2*I*d*f^2
*x+2*d^2*e*f*x-2*I*d*e*f+d^2*e^2-2*f^2)/d^3/a*exp(-I*(d*x+c))-2*(f^2*x^2+2*
e*f*x+e^2)/d/a/(exp(I*(d*x+c))+I)-4/a/d^2*f*ln(exp(I*(d*x+c)))*e+4/a/d^2*f*
ln(exp(I*(d*x+c))+I)*e-4*I/a/d^2*f^2*c*x-4*I*f^2*polylog(2,I*exp(I*(d*x+c))
)/a/d^3-2*I/a/d^3*f^2*c^2+4/a/d^2*f^2*ln(1-I*exp(I*(d*x+c)))*x+4/a/d^3*f^2*
ln(1-I*exp(I*(d*x+c)))*c-2*I/a/d*f^2*x^2+4/a/d^3*f^2*c*ln(exp(I*(d*x+c)))-4
/a/d^3*f^2*c*ln(exp(I*(d*x+c))+I)
```

maxima [B] time = 1.63, size = 603, normalized size = 3.21

$$-\frac{2\,d^3f^2x^3-15i\,d^2e^2-6\,def+\left(6\,d^3ef-3i\,d^2f^2\right)x^2+6i\,f^2+6\left(d^3e^2-i\,d^2ef-df^2\right)x-\left(24\,def\cos\left(dx+c\right)+24\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(2*d^3*f^2*x^3 - 15*I*d^2*e^2 - 6*d*e*f + (6*d^3*e*f - 3*I*d^2*f^2)*x^2 +
6*I*f^2 + 6*(d^3*e^2 - I*d^2*e*f - d*f^2)*x - (24*d*e*f*cos(d*x + c) + 24*I
*d*e*f*sin(d*x + c) + 24*I*d*e*f)*arctan2(sin(d*x + c) + 1, cos(d*x + c)) +
 (24*d*f^2*x*cos(d*x + c) + 24*I*d*f^2*x*sin(d*x + c) + 24*I*d*f^2*x)*arcta
n2(cos(d*x + c), sin(d*x + c) + 1) - (3*I*d^2*f^2*x^2 + 3*I*d^2*e^2 - 6*d*e
*f - 6*I*f^2 - 6*(-I*d^2*e*f + d*f^2)*x)*cos(2*d*x + 2*c) - (2*I*d^3*f^2*x^
3 - 3*d^2*e^2 - 6*I*d*e*f - 3*(-2*I*d^3*e*f + 5*d^2*f^2)*x^2 + 6*f^2 + (6*I
*d^3*e^2 - 30*d^2*e*f - 6*I*d*f^2)*x)*cos(d*x + c) + (24*f^2*cos(d*x + c) +
 24*I*f^2*sin(d*x + c) + 24*I*f^2)*dilog(I*e^(I*d*x + I*c)) - (12*d*f^2*x +
 12*d*e*f + (-12*I*d*f^2*x - 12*I*d*e*f)*cos(d*x + c) + 12*(d*f^2*x + d*e*f
)*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) +
 (3*d^2*f^2*x^2 + 3*d^2*e^2 + 6*I*d*e*f - 6*f^2 + (6*d^2*e*f + 6*I*d*f^2)*x
)*sin(2*d*x + 2*c) + (2*d^3*f^2*x^3 + 3*I*d^2*e^2 - 6*d*e*f + (6*d^3*e*f +
15*I*d^2*f^2)*x^2 - 6*I*f^2 + 6*(d^3*e^2 + 5*I*d^2*e*f - d*f^2)*x)*sin(d*x
+ c))/(-6*I*a*d^3*cos(d*x + c) + 6*a*d^3*sin(d*x + c) + 6*a*d^3)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sin\left(c+d\,x\right)^2\,{\left(e+f\,x\right)}^2}{a+a\,\sin\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^2*(e + f*x)^2)/(a + a*sin(c + d*x)),x)
```

```
[Out] int((sin(c + d*x)^2*(e + f*x)^2)/(a + a*sin(c + d*x)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^{2}\sin^{2}{\left(c+dx \right)}}{\sin{\left(c+dx \right)}+1}\, dx + \int \frac{f^{2}x^{2}\sin^{2}{\left(c+dx \right)}}{\sin{\left(c+dx \right)}+1}\, dx + \int \frac{2efx\sin^{2}{\left(c+dx \right)}}{\sin{\left(c+dx \right)}+1}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sin(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**2*sin(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(f**2*x**2*
sin(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(2*e*f*x*sin(c + d*x)**2/(
sin(c + d*x) + 1), x))/a
```

3.187 $\int \frac{(e+fx)\sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=111

$$\frac{f\sin(c+dx)}{ad^2}+\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}-\frac{(e+fx)\cos(c+dx)}{ad}-\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}-\frac{ex}{a}-\frac{fx^2}{2a}$$

```
[Out] -e*x/a-1/2*f*x^2/a-(f*x+e)*cos(d*x+c)/a/d-(f*x+e)*cot(1/2*c+1/4*Pi+1/2*d*x)
/a/d+2*f*ln(sin(1/2*c+1/4*Pi+1/2*d*x))/a/d^2+f*sin(d*x+c)/a/d^2
```

Rubi [A] time = 0.16, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {4515, 3296, 2637, 3318, 4184, 3475}

$$\frac{f\sin(c+dx)}{ad^2}+\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}-\frac{(e+fx)\cos(c+dx)}{ad}-\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}-\frac{ex}{a}-\frac{fx^2}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sin[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] -((e*x)/a) - (f*x^2)/(2*a) - ((e + f*x)*Cos[c + d*x])/(a*d) - ((e + f*x)*Co
t[c/2 + Pi/4 + (d*x)/2])/(a*d) + (2*f*Log[Sin[c/2 + Pi/4 + (d*x)/2]])/(a*d^
2) + (f*Sin[c + d*x])/(a*d^2)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(e+fx)\sin^2(c+dx)}{a+a\sin(c+dx)}\,dx &= \frac{\int (e+fx)\sin(c+dx)\,dx}{a} - \int \frac{(e+fx)\sin(c+dx)}{a+a\sin(c+dx)}\,dx \\
&= -\frac{(e+fx)\cos(c+dx)}{ad} - \frac{\int (e+fx)\,dx}{a} + \frac{f\int \cos(c+dx)\,dx}{ad} + \int \frac{e+fx}{a+a\sin(c+dx} \\
&= -\frac{ex}{a} - \frac{fx^2}{2a} - \frac{(e+fx)\cos(c+dx)}{ad} + \frac{f\sin(c+dx)}{ad^2} + \frac{\int (e+fx)\csc^2\left(\frac{1}{2}\left(c+\frac{\pi}{2}\right)+\right.}{2a} \\
&= -\frac{ex}{a} - \frac{fx^2}{2a} - \frac{(e+fx)\cos(c+dx)}{ad} - \frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{f\sin(c+dx)}{ad^2} + \\
&= -\frac{ex}{a} - \frac{fx^2}{2a} - \frac{(e+fx)\cos(c+dx)}{ad} - \frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{2f\log\left(\sin\left(\frac{c}{2}+\right.\right.}{ad^2}
\end{aligned}
$$

Mathematica [B] time = 0.83, size = 236, normalized size = 2.13

$$
-\frac{\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)\left(\sin\left(\frac{1}{2}(c+dx)\right)\left(c^2(-f)+2d(e+fx)\cos(c+dx)+2cde-2f\sin(c+dx)\right)\right.}{}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sin[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] -1/2*((Cos[(c + d*x)/2] + Sin[(c + d*x)/2])*(Sin[(c + d*x)/2]*(-4*d*e + 2*c
*d*e + 2*c*f - c^2*f + 2*d^2*e*x - 2*d*f*x + d^2*f*x^2 + 2*d*(e + f*x)*Cos[
c + d*x] - 4*f*Log[Cos[(c + d*x)/2] + Sin[(c + d*x)/2]] - 2*f*Sin[c + d*x])
 + Cos[(c + d*x)/2]*(2*c*d*e + 2*c*f - c^2*f + 2*d^2*e*x + 2*d*f*x + d^2*f*
x^2 + 2*d*(e + f*x)*Cos[c + d*x] - 4*f*Log[Cos[(c + d*x)/2] + Sin[(c + d*x)
/2]] - 2*f*Sin[c + d*x])))/(a*d^2*(1 + Sin[c + d*x]))
```

fricas [B] time = 0.48, size = 196, normalized size = 1.77

$$-\frac{d^2fx^2 + 2\left(dfx + de + f\right)\cos\left(dx + c\right)^2 + 2\,de + 2\left(d^2e + df\right)x + \left(d^2fx^2 + 4\,de + 2\left(d^2e + 2\,df\right)x\right)\cos\left(dx + c\right) - }{2\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(d^2*f*x^2 + 2*(d*f*x + d*e + f)*cos(d*x + c)^2 + 2*d*e + 2*(d^2*e + d
*f)*x + (d^2*f*x^2 + 4*d*e + 2*(d^2*e + 2*d*f)*x)*cos(d*x + c) - 2*(f*cos(d
*x + c) + f*sin(d*x + c) + f)*log(sin(d*x + c) + 1) + (d^2*f*x^2 - 2*d*e +
2*(d^2*e - d*f)*x + 2*(d*f*x + d*e - f)*cos(d*x + c) - 2*f)*sin(d*x + c) -
2*f)/(a*d^2*cos(d*x + c) + a*d^2*sin(d*x + c) + a*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.24, size = 216, normalized size = 1.95

$$-\frac{2e}{ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}-\frac{xf}{a\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)d}+\frac{xf\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}{a\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)d}+\frac{2f\ln\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}{a\,d^2}-\frac{f\ln\left(1+\tan^2\right.}{a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sin(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] -2/a*e/d/(tan(1/2*d*x+1/2*c)+1)-1/a/(tan(1/2*d*x+1/2*c)+1)/d*x*f+1/a/(tan(1
/2*d*x+1/2*c)+1)/d*x*f*tan(1/2*d*x+1/2*c)+2/a*f/d^2*ln(tan(1/2*d*x+1/2*c)+1
```

```
)-1/a*f/d^2*ln(1+tan(1/2*d*x+1/2*c)^2)-2/a*e/d/(1+tan(1/2*d*x+1/2*c)^2)-2/a
*e/d*arctan(tan(1/2*d*x+1/2*c))+f*sin(d*x+c)/a/d^2-1/a*f/d*cos(d*x+c)*x-1/2
*f*x^2/a+1/2/a*f/d^2*c^2
```

maxima [B] time = 1.12, size = 1762, normalized size = 15.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(4*c*f*((sin(d*x + c)/(cos(d*x + c) + 1) + sin(d*x + c)^2/(cos(d*x + c)
 + 1)^2 + 2)/(a*d + a*d*sin(d*x + c)/(cos(d*x + c) + 1) + a*d*sin(d*x + c)^
2/(cos(d*x + c) + 1)^2 + a*d*sin(d*x + c)^3/(cos(d*x + c) + 1)^3) + arctan(
sin(d*x + c)/(cos(d*x + c) + 1))/(a*d)) - 4*e*((sin(d*x + c)/(cos(d*x + c)
+ 1) + sin(d*x + c)^2/(cos(d*x + c) + 1)^2 + 2)/(a + a*sin(d*x + c)/(cos(d*
x + c) + 1) + a*sin(d*x + c)^2/(cos(d*x + c) + 1)^2 + a*sin(d*x + c)^3/(cos
(d*x + c) + 1)^3) + arctan(sin(d*x + c)/(cos(d*x + c) + 1))/a) - (((d*x + c
)^2 - 1)*cos(d*x + c)^4 + ((d*x + c)^2 - 1)*sin(d*x + c)^4 + ((d*x + c)*cos
(d*x + c) + sin(d*x + c) + 1)*cos(2*d*x + 2*c)^3 + 7*(d*x + c)*cos(d*x + c)
^3 + (d*x + (d*x + c)*sin(d*x + c) + c - cos(d*x + c))*sin(2*d*x + 2*c)^3 +
 (2*(d*x + c)^2 - 3)*sin(d*x + c)^3 + (((d*x + c)^2 - 1)*cos(d*x + c)^2 + (
(d*x + c)^2 - 3)*sin(d*x + c)^2 + (d*x + c)^2 + 6*(d*x + c)*cos(d*x + c) +
2*((d*x + c)^2 - (d*x + c)*cos(d*x + c) - 2)*sin(d*x + c) - 1)*cos(2*d*x +
2*c)^2 + ((d*x + c)^2 - 1)*cos(d*x + c)^2 + (((d*x + c)^2 - 3)*cos(d*x + c)
^2 + ((d*x + c)^2 - 1)*sin(d*x + c)^2 + (d*x + c)^2 + ((d*x + c)*cos(d*x +
c) + sin(d*x + c) + 1)*cos(2*d*x + 2*c) + 8*(d*x + c)*cos(d*x + c) + 2*((d*
x + c)^2 + (d*x + c)*cos(d*x + c) - 1)*sin(d*x + c) - 1)*sin(2*d*x + 2*c)^2
 + (2*((d*x + c)^2 - 1)*cos(d*x + c)^2 + (d*x + c)^2 + 7*(d*x + c)*cos(d*x
+ c) - 3)*sin(d*x + c)^2 + ((d*x + c)*cos(d*x + c)^3 - (2*(d*x + c)^2 - 3)*
sin(d*x + c)^3 - (4*(d*x + c)^2 - (d*x + c)*cos(d*x + c) - 6)*sin(d*x + c)^
2 + 2*cos(d*x + c)^2 - ((2*(d*x + c)^2 - 3)*cos(d*x + c)^2 + 2*(d*x + c)^2
+ 12*(d*x + c)*cos(d*x + c) - 4)*sin(d*x + c) + 1)*cos(2*d*x + 2*c) + (d*x
+ c)*cos(d*x + c) - 2*(cos(d*x + c)^4 + sin(d*x + c)^4 + (cos(d*x + c)^2 +
sin(d*x + c)^2 + 2*sin(d*x + c) + 1)*cos(2*d*x + 2*c)^2 + (cos(d*x + c)^2 +
 sin(d*x + c)^2 + 2*sin(d*x + c) + 1)*sin(2*d*x + 2*c)^2 + 2*cos(d*x + c)^2
*sin(d*x + c) + (2*cos(d*x + c)^2 + 1)*sin(d*x + c)^2 + 2*sin(d*x + c)^3 -
2*(sin(d*x + c)^3 + (cos(d*x + c)^2 + 1)*sin(d*x + c) + 2*sin(d*x + c)^2)*c
os(2*d*x + 2*c) + cos(d*x + c)^2 + 2*(cos(d*x + c)^3 + cos(d*x + c)*sin(d*x
 + c)^2 + 2*cos(d*x + c)*sin(d*x + c) + cos(d*x + c))*sin(2*d*x + 2*c))*log
(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) + ((2*(d*x + c)^2 -
3)*cos(d*x + c)^3 + (d*x + c)*sin(d*x + c)^3 + (d*x + (d*x + c)*sin(d*x + c
) + c - cos(d*x + c))*cos(2*d*x + 2*c)^2 + 14*(d*x + c)*cos(d*x + c)^2 + (2
*d*x + (2*(d*x + c)^2 - 3)*cos(d*x + c) + 2*c)*sin(d*x + c)^2 + d*x + 2*((d
*x + c)*cos(d*x + c)^2 - (d*x + c)*sin(d*x + c)^2 - (d*x + c - 2*cos(d*x +
```

```
c))*sin(d*x + c) + cos(d*x + c))*cos(2*d*x + 2*c) + 2*((d*x + c)^2 - 1)*cos
(d*x + c) + ((d*x + c)*cos(d*x + c)^2 + 2*d*x + 4*((d*x + c)^2 - 1)*cos(d*x
 + c) + 2*c)*sin(d*x + c) + c)*sin(2*d*x + 2*c) + ((2*(d*x + c)^2 - 3)*cos(
d*x + c)^2 + 2*(d*x + c)*cos(d*x + c) - 1)*sin(d*x + c))*f/(a*d*cos(d*x + c
)^4 + a*d*sin(d*x + c)^4 + 2*a*d*cos(d*x + c)^2*sin(d*x + c) + 2*a*d*sin(d*
x + c)^3 + a*d*cos(d*x + c)^2 + (a*d*cos(d*x + c)^2 + a*d*sin(d*x + c)^2 +
2*a*d*sin(d*x + c) + a*d)*cos(2*d*x + 2*c)^2 + (a*d*cos(d*x + c)^2 + a*d*si
n(d*x + c)^2 + 2*a*d*sin(d*x + c) + a*d)*sin(2*d*x + 2*c)^2 + (2*a*d*cos(d*
x + c)^2 + a*d)*sin(d*x + c)^2 - 2*(a*d*sin(d*x + c)^3 + 2*a*d*sin(d*x + c)
^2 + (a*d*cos(d*x + c)^2 + a*d)*sin(d*x + c))*cos(2*d*x + 2*c) + 2*(a*d*cos
(d*x + c)^3 + a*d*cos(d*x + c)*sin(d*x + c)^2 + 2*a*d*cos(d*x + c)*sin(d*x
+ c) + a*d*cos(d*x + c))*sin(2*d*x + 2*c)))/d
```

mupad [B] time = 1.77, size = 164, normalized size = 1.48

$$-e^{c\,1i+d\,x\,1i}\left(\frac{d\,e+f\,1i}{2\,a\,d^2}+\frac{f\,x}{2\,a\,d}\right)+e^{-c\,1i-d\,x\,1i}\left(\frac{-d\,e+f\,1i}{2\,a\,d^2}-\frac{f\,x}{2\,a\,d}\right)-\frac{f\,x^2}{2\,a}+\frac{2\,f\,\ln\left(e^{c\,1i}\,e^{d\,x\,1i}+1i\right)}{a\,d^2}-\frac{x\,\left(d\,e+f\,2i\right)}{a\,d}-\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^2*(e + f*x))/(a + a*sin(c + d*x)),x)
```

```
[Out] exp(- c*1i - d*x*1i)*((f*1i - d*e)/(2*a*d^2) - (f*x)/(2*a*d)) - exp(c*1i +
d*x*1i)*((f*1i + d*e)/(2*a*d^2) + (f*x)/(2*a*d)) - (f*x^2)/(2*a) + (2*f*log
(exp(c*1i)*exp(d*x*1i) + 1i))/(a*d^2) - (x*(f*2i + d*e))/(a*d) - ((e + f*x)
*2i)/(a*d*(exp(c*1i + d*x*1i)*1i - 1))
```

sympy [A] time = 3.94, size = 1867, normalized size = 16.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((-2*d**2*e*x*tan(c/2 + d*x/2)**3/(2*a*d**2*tan(c/2 + d*x/2)**3 +
2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 2*d*
*2*e*x*tan(c/2 + d*x/2)**2/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*tan(c/2
 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 2*d**2*e*x*tan(c/2 +
 d*x/2)/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*
d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 2*d**2*e*x/(2*a*d**2*tan(c/2 + d*x/2)**
3 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) -
d**2*f*x**2*tan(c/2 + d*x/2)**3/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*ta
n(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - d**2*f*x**2*tan
(c/2 + d*x/2)**2/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*tan(c/2 + d*x/2)*
*2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - d**2*f*x**2*tan(c/2 + d*x/2)/(
```

```
2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(
c/2 + d*x/2) + 2*a*d**2) - d**2*f*x**2/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*
d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 4*d*e*ta
n(c/2 + d*x/2)**2/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*tan(c/2 + d*x/2)
**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 4*d*e*tan(c/2 + d*x/2)/(2*a*d
**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 +
 d*x/2) + 2*a*d**2) - 8*d*e/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*tan(c/
2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) + 4*d*f*x*tan(c/2 + d
*x/2)**3/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a
*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 4*d*f*x/(2*a*d**2*tan(c/2 + d*x/2)**3
+ 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) + 4*
f*log(tan(c/2 + d*x/2) + 1)*tan(c/2 + d*x/2)**3/(2*a*d**2*tan(c/2 + d*x/2)*
*3 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) +
 4*f*log(tan(c/2 + d*x/2) + 1)*tan(c/2 + d*x/2)**2/(2*a*d**2*tan(c/2 + d*x/
2)**3 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2
) + 4*f*log(tan(c/2 + d*x/2) + 1)*tan(c/2 + d*x/2)/(2*a*d**2*tan(c/2 + d*x/
2)**3 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2
) + 4*f*log(tan(c/2 + d*x/2) + 1)/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*
tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 2*f*log(tan(c
/2 + d*x/2)**2 + 1)*tan(c/2 + d*x/2)**3/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a
*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 2*f*log
(tan(c/2 + d*x/2)**2 + 1)*tan(c/2 + d*x/2)**2/(2*a*d**2*tan(c/2 + d*x/2)**3
 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) - 2
*f*log(tan(c/2 + d*x/2)**2 + 1)*tan(c/2 + d*x/2)/(2*a*d**2*tan(c/2 + d*x/2)
**3 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2)
- 2*f*log(tan(c/2 + d*x/2)**2 + 1)/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2
*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) + 4*f*tan(c/2
+ d*x/2)**2/(2*a*d**2*tan(c/2 + d*x/2)**3 + 2*a*d**2*tan(c/2 + d*x/2)**2 +
2*a*d**2*tan(c/2 + d*x/2) + 2*a*d**2) + 4*f*tan(c/2 + d*x/2)/(2*a*d**2*tan(
c/2 + d*x/2)**3 + 2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2*tan(c/2 + d*x/2)
+ 2*a*d**2), Ne(d, 0)), ((e*x + f*x**2/2)*sin(c)**2/(a*sin(c) + a), True))
```

3.188 $\int \frac{\sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=45

$$-\frac{\cos(c+dx)}{ad}-\frac{\cos(c+dx)}{ad(\sin(c+dx)+1)}-\frac{x}{a}$$

```
[Out] -x/a-cos(d*x+c)/a/d-cos(d*x+c)/a/d/(1+sin(d*x+c))
```

Rubi [A] time = 0.08, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {2746, 12, 2735, 2648}

$$-\frac{\cos(c+dx)}{ad}-\frac{\cos(c+dx)}{ad(\sin(c+dx)+1)}-\frac{x}{a}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[c + d*x]^2/(a + a*Sin[c + d*x]),x]
```

```
[Out] -(x/a) - Cos[c + d*x]/(a*d) - Cos[c + d*x]/(a*d*(1 + Sin[c + d*x]))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2648

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> -Simp[Cos[c +
 d*x]/(d*(b + a*Sin[c + d*x])), x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b
^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2746

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2/((c_.) + (d_.)*sin[(e_.) + (f
_.)*(x_)]), x_Symbol] :> -Simp[(b^2*Cos[e + f*x])/(d*f), x] + Dist[1/d, Int
[Simp[a^2*d - b*(b*c - 2*a*d)*Sin[e + f*x], x]/(c + d*Sin[e + f*x]), x], x]
```

```
/; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\sin^2(c+dx)}{a+a\sin(c+dx)}\,dx &= -\frac{\cos(c+dx)}{ad}-\frac{\int \frac{a\sin(c+dx)}{a+a\sin(c+dx)}\,dx}{a}\\ &= -\frac{\cos(c+dx)}{ad}-\int \frac{\sin(c+dx)}{a+a\sin(c+dx)}\,dx\\ &= -\frac{x}{a}-\frac{\cos(c+dx)}{ad}+\int \frac{1}{a+a\sin(c+dx)}\,dx\\ &= -\frac{x}{a}-\frac{\cos(c+dx)}{ad}-\frac{\cos(c+dx)}{d(a+a\sin(c+dx))}\end{aligned}$$

Mathematica [A] time = 0.16, size = 85, normalized size = 1.89

$$-\frac{\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)\left(\cos\left(\frac{1}{2}(c+dx)\right)(\cos(c+dx)+c+dx)+\sin\left(\frac{1}{2}(c+dx)\right)(\cos(c+dx)+c\right.}{ad(\sin(c+dx)+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[c + d*x]^2/(a + a*Sin[c + d*x]),x]
```

```
[Out] -(((Cos[(c + d*x)/2] + Sin[(c + d*x)/2])*(Cos[(c + d*x)/2]*(c + d*x + Cos[c
 + d*x]) + (-2 + c + d*x + Cos[c + d*x])*Sin[(c + d*x)/2]))/(a*d*(1 + Sin[c
 + d*x])))
```

fricas [A] time = 0.47, size = 69, normalized size = 1.53

$$-\frac{dx+(dx+2)\cos(dx+c)+\cos(dx+c)^2+(dx+\cos(dx+c)-1)\sin(dx+c)+1}{ad\cos(dx+c)+ad\sin(dx+c)+ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(d*x + (d*x + 2)*cos(d*x + c) + cos(d*x + c)^2 + (d*x + cos(d*x + c) - 1)*
sin(d*x + c) + 1)/(a*d*cos(d*x + c) + a*d*sin(d*x + c) + a*d)
```

giac [A] time = 0.63, size = 77, normalized size = 1.71

$$-\frac{\frac{dx+c}{a}+\frac{2\left(\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2+\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+2\right)}{\left(\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^3+\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2+\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+1\right)a}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -((d*x + c)/a + 2*(tan(1/2*d*x + 1/2*c)^2 + tan(1/2*d*x + 1/2*c) + 2)/((tan
(1/2*d*x + 1/2*c)^3 + tan(1/2*d*x + 1/2*c)^2 + tan(1/2*d*x + 1/2*c) + 1)*a)
)/d
```

maple [A] time = 0.06, size = 64, normalized size = 1.42

$$-\frac{2}{ad\left(1+\tan^{2}\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}-\frac{2\arctan\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{ad}-\frac{2}{ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] -2/a/d/(1+tan(1/2*d*x+1/2*c)^2)-2/a/d*arctan(tan(1/2*d*x+1/2*c))-2/a/d/(tan
(1/2*d*x+1/2*c)+1)
```

maxima [B] time = 0.94, size = 129, normalized size = 2.87

$$-\frac{2\left(\frac{\frac{\sin(dx+c)}{\cos(dx+c)+1}+\frac{\sin(dx+c)^{2}}{(\cos(dx+c)+1)^{2}}+2}{a+\frac{a\sin(dx+c)}{\cos(dx+c)+1}+\frac{a\sin(dx+c)^{2}}{(\cos(dx+c)+1)^{2}}+\frac{a\sin(dx+c)^{3}}{(\cos(dx+c)+1)^{3}}}+\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{a}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -2*((sin(d*x + c)/(cos(d*x + c) + 1) + sin(d*x + c)^2/(cos(d*x + c) + 1)^2
+ 2)/(a + a*sin(d*x + c)/(cos(d*x + c) + 1) + a*sin(d*x + c)^2/(cos(d*x + c
) + 1)^2 + a*sin(d*x + c)^3/(cos(d*x + c) + 1)^3) + arctan(sin(d*x + c)/(co
s(d*x + c) + 1))/a)/d
```

mupad [B] time = 1.18, size = 69, normalized size = 1.53

$$-\frac{x}{a}-\frac{2\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^{2}+2\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+4}{a\,d\,\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+1\right)\,\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^{2}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)^2/(a + a*sin(c + d*x)),x)
```

```
[Out] - x/a - (2*tan(c/2 + (d*x)/2) + 2*tan(c/2 + (d*x)/2)^2 + 4)/(a*d*(tan(c/2 +
 (d*x)/2) + 1)*(tan(c/2 + (d*x)/2)^2 + 1))
```

sympy [A] time = 3.05, size = 422, normalized size = 9.38

$$\begin{cases} -\frac{dx\tan^3\left(\frac{c}{2}+\frac{dx}{2}\right)}{ad\tan^3\left(\frac{c}{2}+\frac{dx}{2}\right)+ad\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+ad\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+ad} - \frac{dx\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)}{ad\tan^3\left(\frac{c}{2}+\frac{dx}{2}\right)+ad\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+ad\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+ad} - \frac{dx\tan\left(\frac{c}{2}+\right.}{ad\tan^3\left(\frac{c}{2}+\frac{dx}{2}\right)+ad\tan^2\left(\frac{c}{2}+\right.} \\ \frac{x\sin^2(c)}{a\sin(c)+a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((-d*x*tan(c/2 + d*x/2)**3/(a*d*tan(c/2 + d*x/2)**3 + a*d*tan(c/2
+ d*x/2)**2 + a*d*tan(c/2 + d*x/2) + a*d) - d*x*tan(c/2 + d*x/2)**2/(a*d*ta
n(c/2 + d*x/2)**3 + a*d*tan(c/2 + d*x/2)**2 + a*d*tan(c/2 + d*x/2) + a*d) -
 d*x*tan(c/2 + d*x/2)/(a*d*tan(c/2 + d*x/2)**3 + a*d*tan(c/2 + d*x/2)**2 +
a*d*tan(c/2 + d*x/2) + a*d) - d*x/(a*d*tan(c/2 + d*x/2)**3 + a*d*tan(c/2 +
d*x/2)**2 + a*d*tan(c/2 + d*x/2) + a*d) - 2*tan(c/2 + d*x/2)**2/(a*d*tan(c/
2 + d*x/2)**3 + a*d*tan(c/2 + d*x/2)**2 + a*d*tan(c/2 + d*x/2) + a*d) - 2*t
an(c/2 + d*x/2)/(a*d*tan(c/2 + d*x/2)**3 + a*d*tan(c/2 + d*x/2)**2 + a*d*ta
n(c/2 + d*x/2) + a*d) - 4/(a*d*tan(c/2 + d*x/2)**3 + a*d*tan(c/2 + d*x/2)**
2 + a*d*tan(c/2 + d*x/2) + a*d), Ne(d, 0)), (x*sin(c)**2/(a*sin(c) + a), Tr
ue))
```

3.189 $\int \frac{\sin^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sin^2(c+dx)}{(e+fx)(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sin(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sin[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])),x]
[Out] Defer[Int][Sin[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sin^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx = \int \frac{\sin^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 9.62, size = 0, normalized size = 0.00

$$\int \frac{\sin^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sin[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])),x]
[Out] Integrate[Sin[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\cos(dx+c)^2-1}{afx+ae+(afx+ae)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(-(cos(d*x + c)^2 - 1)/(a*f*x + a*e + (a*f*x + a*e)*sin(d*x + c)),
x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sin\left(dx+c\right)^{2}}{\left(fx+e\right)\left(a\sin\left(dx+c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sin(d*x + c)^2/((f*x + e)*(a*sin(d*x + c) + a)), x)
```

maple [A] time = 0.58, size = 0, normalized size = 0.00

$$\int \frac{\sin^{2}\left(dx+c\right)}{\left(fx+e\right)\left(a+a\sin\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] int(sin(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\sin\left(c+d\,x\right)}^2}{\left(e+f\,x\right)\,\left(a+a\,\sin\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)^2/((e + f*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] int(sin(c + d*x)^2/((e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sin^2(c+dx)}{e\sin(c+dx)+e+fx\sin(c+dx)+fx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)**2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sin(c + d*x)**2/(e*sin(c + d*x) + e + f*x*sin(c + d*x) + f*x), x)/
a
```

3.190 $\int \frac{\sin^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sin^2(c+dx)}{(e+fx)^2(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sin(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sin[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
[Out] Defer[Int][Sin[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sin^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx=\int \frac{\sin^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 10.44, size = 0, normalized size = 0.00

$$\int \frac{\sin^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sin[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
[Out] Integrate[Sin[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\cos(dx+c)^2-1}{af^2x^2+2aefx+ae^2+\left(af^2x^2+2aefx+ae^2\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(-(cos(d*x + c)^2 - 1)/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2
+ 2*a*e*f*x + a*e^2)*sin(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sin\left(dx+c\right)^{2}}{\left(fx+e\right)^{2}\left(a\sin\left(dx+c\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sin(d*x + c)^2/((f*x + e)^2*(a*sin(d*x + c) + a)), x)
```

maple [A] time = 0.89, size = 0, normalized size = 0.00

$$\int \frac{\sin^{2}\left(dx+c\right)}{\left(fx+e\right)^{2}\left(a+a\sin\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int(sin(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sin\left(c+d\,x\right)^{2}}{\left(e+f\,x\right)^{2}\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)^2/((e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(sin(c + d*x)^2/((e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sin^2(c+dx)}{e^2\sin(c+dx)+e^2+2efx\sin(c+dx)+2efx+f^2x^2\sin(c+dx)+f^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)**2/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sin(c + d*x)**2/(e**2*sin(c + d*x) + e**2 + 2*e*f*x*sin(c + d*x) +
 2*e*f*x + f**2*x**2*sin(c + d*x) + f**2*x**2), x)/a
```

3.191 $\int \frac{(e+fx)^3 \sin^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=382

$$-\frac{12f^3\text{Li}_3\left(ie^{i(c+dx)}\right)}{ad^4}-\frac{3f^3\sin^2(c+dx)}{8ad^4}+\frac{6f^3\sin(c+dx)}{ad^4}+\frac{12if^2(e+fx)\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}-\frac{6f^2(e+fx)\cos(c+dx)}{ad^3}+3$$

```
[Out] -3/4*e*f^2*x/a/d^2-3/8*f^3*x^2/a/d^2+12*I*f^2*(f*x+e)*polylog(2,I*exp(I*(d*
x+c)))/a/d^3+3/8*(f*x+e)^4/a/f-6*f^2*(f*x+e)*cos(d*x+c)/a/d^3+(f*x+e)^3*cos
(d*x+c)/a/d+(f*x+e)^3*cot(1/2*c+1/4*Pi+1/2*d*x)/a/d-6*f*(f*x+e)^2*ln(1-I*ex
p(I*(d*x+c)))/a/d^2+I*(f*x+e)^3/a/d-12*f^3*polylog(3,I*exp(I*(d*x+c)))/a/d^
4+6*f^3*sin(d*x+c)/a/d^4-3*f*(f*x+e)^2*sin(d*x+c)/a/d^2+3/4*f^2*(f*x+e)*cos
(d*x+c)*sin(d*x+c)/a/d^3-1/2*(f*x+e)^3*cos(d*x+c)*sin(d*x+c)/a/d-3/8*f^3*si
n(d*x+c)^2/a/d^4+3/4*f*(f*x+e)^2*sin(d*x+c)^2/a/d^2
```

Rubi [A] time = 0.62, antiderivative size = 382, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 13, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.464, Rules used = {4515, 3311, 32, 3310, 3296, 2637, 3318, 4184, 3717, 2190, 2531, 2282, 6589}

$$\frac{12if^2(e+fx)\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}-\frac{12f^3\text{PolyLog}\left(3,ie^{i(c+dx)}\right)}{ad^4}-\frac{6f^2(e+fx)\cos(c+dx)}{ad^3}+\frac{3f^2(e+fx)\sin(c+dx}{4ad^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sin[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-3*e*f^2*x)/(4*a*d^2) - (3*f^3*x^2)/(8*a*d^2) + (I*(e + f*x)^3)/(a*d) + (3
*(e + f*x)^4)/(8*a*f) - (6*f^2*(e + f*x)*Cos[c + d*x])/(a*d^3) + ((e + f*x)
^3*Cos[c + d*x])/(a*d) + ((e + f*x)^3*Cot[c/2 + Pi/4 + (d*x)/2])/(a*d) - (6
*f*(e + f*x)^2*Log[1 - I*E^(I*(c + d*x))])/(a*d^2) + ((12*I)*f^2*(e + f*x)*
PolyLog[2, I*E^(I*(c + d*x))])/(a*d^3) - (12*f^3*PolyLog[3, I*E^(I*(c + d*x
))])/(a*d^4) + (6*f^3*Sin[c + d*x])/(a*d^4) - (3*f*(e + f*x)^2*Sin[c + d*x]
)/(a*d^2) + (3*f^2*(e + f*x)*Cos[c + d*x]*Sin[c + d*x])/(4*a*d^3) - ((e + f
*x)^3*Cos[c + d*x]*Sin[c + d*x])/(2*a*d) - (3*f^3*Sin[c + d*x]^2)/(8*a*d^4)
 + (3*f*(e + f*x)^2*Sin[c + d*x]^2)/(4*a*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
```

```
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\sin^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\sin^2(c+dx)\,dx}{a} - \int \frac{(e+fx)^3\sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{(e+fx)^3\cos(c+dx)\sin(c+dx)}{2ad} + \frac{3f(e+fx)^2\sin^2(c+dx)}{4ad^2} + \frac{\int (e+fx)^3\,dx}{2a}$$

$$= \frac{(e+fx)^4}{8af} + \frac{(e+fx)^3\cos(c+dx)}{ad} + \frac{3f^2(e+fx)\cos(c+dx)\sin(c+dx)}{4ad^3} - \frac{(e+}{}$$

$$= -\frac{3ef^2x}{4ad^2} - \frac{3f^3x^2}{8ad^2} + \frac{3(e+fx)^4}{8af} + \frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{3f(e+fx)^2\sin(c+dx}{ad^2}$$

$$= -\frac{3ef^2x}{4ad^2} - \frac{3f^3x^2}{8ad^2} + \frac{3(e+fx)^4}{8af} - \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} + \frac{(e+fx)^3\cos(c+dx}{ad}$$

$$= -\frac{3ef^2x}{4ad^2} - \frac{3f^3x^2}{8ad^2} + \frac{i(e+fx)^3}{ad} + \frac{3(e+fx)^4}{8af} - \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} + \frac{(e+fx}{}$$

$$= -\frac{3ef^2x}{4ad^2} - \frac{3f^3x^2}{8ad^2} + \frac{i(e+fx)^3}{ad} + \frac{3(e+fx)^4}{8af} - \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} + \frac{(e+fx}{}$$

$$= -\frac{3ef^2x}{4ad^2} - \frac{3f^3x^2}{8ad^2} + \frac{i(e+fx)^3}{ad} + \frac{3(e+fx)^4}{8af} - \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} + \frac{(e+fx}{}$$

$$= -\frac{3ef^2x}{4ad^2} - \frac{3f^3x^2}{8ad^2} + \frac{i(e+fx)^3}{ad} + \frac{3(e+fx)^4}{8af} - \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} + \frac{(e+fx}{}$$

$$= -\frac{3ef^2x}{4ad^2} - \frac{3f^3x^2}{8ad^2} + \frac{i(e+fx)^3}{ad} + \frac{3(e+fx)^4}{8af} - \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} + \frac{(e+fx}{}$$

Mathematica [A] time = 2.95, size = 538, normalized size = 1.41

$$\frac{192f(\cos(c)+i\sin(c))\left(\frac{2f(\cos(c)-i(\sin(c)+1))(d(e+fx)\text{Li}_2(-i\cos(c+dx)-\sin(c+dx))-if\text{Li}_3(-i\cos(c+dx)-\sin(c+dx)))}{d^3} - \frac{(\sin(c)+i\cos(c)+1)(e+fx)^2\log(\sin(c+dx)+i\cos(c+dx)+}{d}\right.}{d(\cos(c)+i(\sin(c)+1))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sin[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (48*e^3*x + 72*e^2*f*x^2 + 48*e*f^2*x^3 + 12*f^3*x^4 + (192*f*(Cos[c] + I*S
in[c])*(((e + f*x)^3*(Cos[c] - I*Sin[c]))/(3*f) - ((e + f*x)^2*Log[1 + I*Co
s[c + d*x] + Sin[c + d*x]]*(1 + I*Cos[c] + Sin[c]))/d + (2*f*(d*(e + f*x)*P
olyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*x]] - I*f*PolyLog[3, (-I)*Cos[c + d
*x] - Sin[c + d*x]])*(Cos[c] - I*(1 + Sin[c])))/d^3))/(d*(Cos[c] + I*(1 + S
in[c]))) - (64*(e + f*x)^3*Sin[(d*x)/2])/(d*(Cos[c/2] + Sin[c/2])*(Cos[(c +
 d*x)/2] + Sin[(c + d*x)/2])) + (16*((6*I)*f^3 - 6*d*f^2*(e + f*x) - (3*I)*
d^2*f*(e + f*x)^2 + d^3*(e + f*x)^3)*(Cos[c + d*x] - I*Sin[c + d*x]))/d^4 +
 (16*((-6*I)*f^3 - 6*d*f^2*(e + f*x) + (3*I)*d^2*f*(e + f*x)^2 + d^3*(e + f
*x)^3)*(Cos[c + d*x] + I*Sin[c + d*x]))/d^4 + ((3*f^3 + (6*I)*d*f^2*(e + f*
x) - 6*d^2*f*(e + f*x)^2 - (4*I)*d^3*(e + f*x)^3)*(Cos[2*(c + d*x)] - I*Sin
[2*(c + d*x)]))/d^4 + ((3*f^3 - (6*I)*d*f^2*(e + f*x) - 6*d^2*f*(e + f*x)^2
 + (4*I)*d^3*(e + f*x)^3)*(Cos[2*(c + d*x)] + I*Sin[2*(c + d*x)]))/d^4)/(32
*a)
```

fricas [C] time = 0.56, size = 1563, normalized size = 4.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/16*(6*d^4*f^3*x^4 + 16*d^3*e^3 - 42*d^2*e^2*f + 8*(3*d^4*e*f^2 + 2*d^3*f^
3)*x^3 + 2*(4*d^3*f^3*x^3 + 4*d^3*e^3 - 6*d^2*e^2*f - 6*d*e*f^2 + 3*f^3 + 6
*(2*d^3*e*f^2 - d^2*f^3)*x^2 + 6*(2*d^3*e^2*f - 2*d^2*e*f^2 - d*f^3)*x)*cos
(d*x + c)^3 + 93*f^3 + 6*(6*d^4*e^2*f + 8*d^3*e*f^2 - 7*d^2*f^3)*x^2 + 2*(8
*d^3*f^3*x^3 + 8*d^3*e^3 + 18*d^2*e^2*f - 48*d*e*f^2 - 45*f^3 + 6*(4*d^3*e*
f^2 + 3*d^2*f^3)*x^2 + 12*(2*d^3*e^2*f + 3*d^2*e*f^2 - 4*d*f^3)*x)*cos(d*x
+ c)^2 + 12*(2*d^4*e^3 + 4*d^3*e^2*f - 7*d^2*e*f^2)*x + 3*(2*d^4*f^3*x^4 +
8*d^3*e^3 + 2*d^2*e^2*f - 28*d*e*f^2 + 8*(d^4*e*f^2 + d^3*f^3)*x^3 - f^3 +
2*(6*d^4*e^2*f + 12*d^3*e*f^2 + d^2*f^3)*x^2 + 4*(2*d^4*e^3 + 6*d^3*e^2*f +
 d^2*e*f^2 - 7*d*f^3)*x)*cos(d*x + c) + (96*I*d*f^3*x + 96*I*d*e*f^2 + (96*
I*d*f^3*x + 96*I*d*e*f^2)*cos(d*x + c) + (96*I*d*f^3*x + 96*I*d*e*f^2)*sin(
d*x + c))*dilog(I*cos(d*x + c) - sin(d*x + c)) + (-96*I*d*f^3*x - 96*I*d*e*
f^2 + (-96*I*d*f^3*x - 96*I*d*e*f^2)*cos(d*x + c) + (-96*I*d*f^3*x - 96*I*d
*e*f^2)*sin(d*x + c))*dilog(-I*cos(d*x + c) - sin(d*x + c)) - 48*(d^2*e^2*f
 - 2*c*d*e*f^2 + c^2*f^3 + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c)
 + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*sin(d*x + c))*log(cos(d*x + c) + I*s
in(d*x + c) + I) - 48*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3
+ (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c) + (d^2
*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*sin(d*x + c))*log(I*cos(d
*x + c) + sin(d*x + c) + 1) - 48*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2
 - c^2*f^3 + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x
+ c) + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*sin(d*x + c))*
log(-I*cos(d*x + c) + sin(d*x + c) + 1) - 48*(d^2*e^2*f - 2*c*d*e*f^2 + c^2
```

```
*f^3 + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c) + (d^2*e^2*f - 2*c*
d*e*f^2 + c^2*f^3)*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + I) -
96*(f^3*cos(d*x + c) + f^3*sin(d*x + c) + f^3)*polylog(3, I*cos(d*x + c) -
sin(d*x + c)) - 96*(f^3*cos(d*x + c) + f^3*sin(d*x + c) + f^3)*polylog(3, -
I*cos(d*x + c) - sin(d*x + c)) + (6*d^4*f^3*x^4 - 16*d^3*e^3 - 42*d^2*e^2*f
 + 8*(3*d^4*e*f^2 - 2*d^3*f^3)*x^3 + 93*f^3 + 6*(6*d^4*e^2*f - 8*d^3*e*f^2
- 7*d^2*f^3)*x^2 - 2*(4*d^3*f^3*x^3 + 4*d^3*e^3 + 6*d^2*e^2*f - 6*d*e*f^2 -
 3*f^3 + 6*(2*d^3*e*f^2 + d^2*f^3)*x^2 + 6*(2*d^3*e^2*f + 2*d^2*e*f^2 - d*f
^3)*x)*cos(d*x + c)^2 + 12*(2*d^4*e^3 - 4*d^3*e^2*f - 7*d^2*e*f^2)*x + 4*(2
*d^3*f^3*x^3 + 2*d^3*e^3 - 12*d^2*e^2*f - 21*d*e*f^2 + 24*f^3 + 6*(d^3*e*f^
2 - 2*d^2*f^3)*x^2 + 3*(2*d^3*e^2*f - 8*d^2*e*f^2 - 7*d*f^3)*x)*cos(d*x + c
))*sin(d*x + c))/(a*d^4*cos(d*x + c) + a*d^4*sin(d*x + c) + a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sin\left(dx+c\right)^{3}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sin(d*x + c)^3/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.29, size = 870, normalized size = 2.28

$$\frac{3f^{3}x^{4}}{8a}+\frac{3e^{3}x}{2a}+\frac{\left(f^{3}x^{3}d^{3}+3d^{3}e\,f^{2}x^{2}+3id^{2}f^{3}x^{2}+3d^{3}e^{2}fx+6id^{2}e\,f^{2}x+d^{3}e^{3}+3id^{2}e^{2}f-6d\,f^{3}x-6f^{2}ed-6if\right.}{2a\,d^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sin(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] -12/a/d^2*f^2*e*ln(1-I*exp(I*(d*x+c)))*x-12/a/d^3*f^2*e*ln(1-I*exp(I*(d*x+c
)))*c-12/a/d^3*f^2*e*c*ln(exp(I*(d*x+c)))-6*I/a/d^3*f^3*c^2*x+12*I/a/d^3*f^
2*e*polylog(2,I*exp(I*(d*x+c)))+6*I/a/d*f^2*e*x^2+6*I/a/d^3*f^2*e*c^2+3/8/a
*f^3*x^4+3/2/a*e^3*x+2*(f^3*x^3+3*e*f^2*x^2+3*e^2*f*x+e^3)/d/a/(exp(I*(d*x+
c))+I)-1/8/d^3*(2*d^2*f^3*x^3+6*d^2*e*f^2*x^2+6*d^2*e^2*f*x+2*d^2*e^3-3*f^3
*x-3*e*f^2)/a*sin(2*d*x+2*c)+12*I/a/d^2*f^2*e*c*x+3/2/a*e*f^2*x^3+9/4/a*e^2
*f*x^2+6/a/d^2*f*ln(exp(I*(d*x+c)))*e^2+6/a/d^4*f^3*c^2*ln(exp(I*(d*x+c)))-
6/a/d^4*f^3*c^2*ln(exp(I*(d*x+c))+I)+2*I/a/d*f^3*x^3-4*I/a/d^4*f^3*c^3-6/a/
d^2*f*ln(exp(I*(d*x+c))+I)*e^2+1/2*(f^3*x^3*d^3+3*I*d^2*f^3*x^2+3*d^3*e*f^2
*x^2+6*I*d^2*e*f^2*x+3*d^3*e^2*f*x+3*I*d^2*e^2*f+d^3*e^3-6*d*f^3*x-6*I*f^3-
6*f^2*e*d)/a/d^4*exp(I*(d*x+c))-3/16*f*(2*d^2*f^2*x^2+4*d^2*e*f*x+2*d^2*e^2
-f^2)/a/d^4*cos(2*d*x+2*c)-6/a/d^2*f^3*ln(1-I*exp(I*(d*x+c)))*x^2+1/2*(f^3*
```

```
x^3*d^3-3*I*d^2*f^3*x^2+3*d^3*e*f^2*x^2-6*I*d^2*e*f^2*x+3*d^3*e^2*f*x-3*I*d
^2*e^2*f+d^3*e^3-6*d*f^3*x+6*I*f^3-6*f^2*e*d)/a/d^4*exp(-I*(d*x+c))-12*f^3*
polylog(3,I*exp(I*(d*x+c)))/a/d^4+6/a/d^4*f^3*ln(1-I*exp(I*(d*x+c)))*c^2+12
/a/d^3*f^2*e*c*ln(exp(I*(d*x+c))+I)+12*I/a/d^3*f^3*polylog(2,I*exp(I*(d*x+c
)))*x
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sin(c+d\,x)^3\,\left(e+f\,x\right)^3}{a+a\,\sin(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^3*(e + f*x)^3)/(a + a*sin(c + d*x)),x)
```

```
[Out] int((sin(c + d*x)^3*(e + f*x)^3)/(a + a*sin(c + d*x)), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^3\sin^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{f^3x^3\sin^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{3ef^2x^2\sin^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{3e^2fx\sin^3(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sin(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**3*sin(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(f**3*x**3*
sin(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(3*e*f**2*x**2*sin(c + d*x
)**3/(sin(c + d*x) + 1), x) + Integral(3*e**2*f*x*sin(c + d*x)**3/(sin(c +
d*x) + 1), x))/a
```

3.192 $\int \frac{(e+fx)^2\sin^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=278

$$\frac{4if^2\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}-\frac{2f^2\cos(c+dx)}{ad^3}+\frac{f^2\sin(c+dx)\cos(c+dx)}{4ad^3}-\frac{4f(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad^2}+\frac{f(e+fx)\sin^2(c}{2ad^2}$$

```
[Out] -1/4*f^2*x/a/d^2+I*(f*x+e)^2/a/d+1/2*(f*x+e)^3/a/f-2*f^2*cos(d*x+c)/a/d^3+(
f*x+e)^2*cos(d*x+c)/a/d+(f*x+e)^2*cot(1/2*c+1/4*Pi+1/2*d*x)/a/d-4*f*(f*x+e)
*ln(1-I*exp(I*(d*x+c)))/a/d^2+4*I*f^2*polylog(2,I*exp(I*(d*x+c)))/a/d^3-2*f
*(f*x+e)*sin(d*x+c)/a/d^2+1/4*f^2*cos(d*x+c)*sin(d*x+c)/a/d^3-1/2*(f*x+e)^2
*cos(d*x+c)*sin(d*x+c)/a/d+1/2*f*(f*x+e)*sin(d*x+c)^2/a/d^2
```

Rubi [A] time = 0.49, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 13, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.464, Rules used = {4515, 3311, 32, 2635, 8, 3296, 2638, 3318, 4184, 3717, 2190, 2279, 2391}

$$\frac{4if^2\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}-\frac{4f(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad^2}+\frac{f(e+fx)\sin^2(c+dx)}{2ad^2}-\frac{2f(e+fx)\sin(c+dx)}{ad^2}-\frac{2f^2 c}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sin[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] -(f^2*x)/(4*a*d^2) + (I*(e + f*x)^2)/(a*d) + (e + f*x)^3/(2*a*f) - (2*f^2*C
os[c + d*x])/(a*d^3) + ((e + f*x)^2*Cos[c + d*x])/(a*d) + ((e + f*x)^2*Cot[
c/2 + Pi/4 + (d*x)/2])/(a*d) - (4*f*(e + f*x)*Log[1 - I*E^(I*(c + d*x))])/(
a*d^2) + ((4*I)*f^2*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^3) - (2*f*(e + f*x)
*Sin[c + d*x])/(a*d^2) + (f^2*Cos[c + d*x]*Sin[c + d*x])/(4*a*d^3) - ((e +
f*x)^2*Cos[c + d*x]*Sin[c + d*x])/(2*a*d) + (f*(e + f*x)*Sin[c + d*x]^2)/(2
*a*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2\sin^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\sin^2(c+dx)\,dx}{a} - \int \frac{(e+fx)^2\sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{(e+fx)^2\cos(c+dx)\sin(c+dx)}{2ad} + \frac{f(e+fx)\sin^2(c+dx)}{2ad^2} + \frac{\int (e+fx)^2\,dx}{2a} - \int$$

$$= \frac{(e+fx)^3}{6af} + \frac{(e+fx)^2\cos(c+dx)}{ad} + \frac{f^2\cos(c+dx)\sin(c+dx)}{4ad^3} - \frac{(e+fx)^2\cos(c}{2}$$

$$= -\frac{f^2x}{4ad^2} + \frac{(e+fx)^3}{2af} + \frac{(e+fx)^2\cos(c+dx)}{ad} - \frac{2f(e+fx)\sin(c+dx)}{ad^2} + \frac{f^2\cos(c+}{}$$

$$= -\frac{f^2x}{4ad^2} + \frac{(e+fx)^3}{2af} - \frac{2f^2\cos(c+dx)}{ad^3} + \frac{(e+fx)^2\cos(c+dx)}{ad} + \frac{(e+fx)^2\cot\left(\frac{c}{2}\right.}{ad}$$

$$= -\frac{f^2x}{4ad^2} + \frac{i(e+fx)^2}{ad} + \frac{(e+fx)^3}{2af} - \frac{2f^2\cos(c+dx)}{ad^3} + \frac{(e+fx)^2\cos(c+dx)}{ad} + \frac{(e+}{}$$

$$= -\frac{f^2x}{4ad^2} + \frac{i(e+fx)^2}{ad} + \frac{(e+fx)^3}{2af} - \frac{2f^2\cos(c+dx)}{ad^3} + \frac{(e+fx)^2\cos(c+dx)}{ad} + \frac{(e+}{}$$

$$= -\frac{f^2x}{4ad^2} + \frac{i(e+fx)^2}{ad} + \frac{(e+fx)^3}{2af} - \frac{2f^2\cos(c+dx)}{ad^3} + \frac{(e+fx)^2\cos(c+dx)}{ad} + \frac{(e+}{}$$

$$= -\frac{f^2x}{4ad^2} + \frac{i(e+fx)^2}{ad} + \frac{(e+fx)^3}{2af} - \frac{2f^2\cos(c+dx)}{ad^3} + \frac{(e+fx)^2\cos(c+dx)}{ad} + \frac{(e+}{}$$

Mathematica [B] time = 3.11, size = 830, normalized size = 2.99

$$-\frac{-8f^2x^3\sin\left(\frac{1}{2}(c+dx)\right)d^3 - 24efx^2\sin\left(\frac{1}{2}(c+dx)\right)d^3 - 24e^2x\sin\left(\frac{1}{2}(c+dx)\right)d^3 - 6e^2\cos\left(\frac{3}{2}(c+dx)\right)d^2 - 6f^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sin[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] -1/16*(-6*d^2*e^2*Cos[(3*(c + d*x))/2] - 14*d*e*f*Cos[(3*(c + d*x))/2] + 15
*f^2*Cos[(3*(c + d*x))/2] - 12*d^2*e*f*x*Cos[(3*(c + d*x))/2] - 14*d*f^2*x*
Cos[(3*(c + d*x))/2] - 6*d^2*f^2*x^2*Cos[(3*(c + d*x))/2] - 2*d^2*e^2*Cos[(
```

```
5*(c + d*x))/2] + 2*d*e*f*Cos[(5*(c + d*x))/2] + f^2*Cos[(5*(c + d*x))/2] -
 4*d^2*e*f*x*Cos[(5*(c + d*x))/2] + 2*d*f^2*x*Cos[(5*(c + d*x))/2] - 2*d^2*
f^2*x^2*Cos[(5*(c + d*x))/2] - 8*Cos[(c + d*x)/2]*(-2*f^2 - 2*d*f*(e + f*x)
 + (3 - 2*I)*d^2*(e + f*x)^2 + d^3*x*(3*e^2 + 3*e*f*x + f^2*x^2) - 8*d*f*(e
 + f*x)*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]) + (24 + 16*I)*d^2*e^2*Sin[(
c + d*x)/2] + 16*d*e*f*Sin[(c + d*x)/2] - 16*f^2*Sin[(c + d*x)/2] - 24*d^3*
e^2*x*Sin[(c + d*x)/2] + (48 + 32*I)*d^2*e*f*x*Sin[(c + d*x)/2] + 16*d*f^2*
x*Sin[(c + d*x)/2] - 24*d^3*e*f*x^2*Sin[(c + d*x)/2] + (24 + 16*I)*d^2*f^2*
x^2*Sin[(c + d*x)/2] - 8*d^3*f^2*x^3*Sin[(c + d*x)/2] + 64*d*e*f*Log[1 + I*
Cos[c + d*x] + Sin[c + d*x]]*Sin[(c + d*x)/2] + 64*d*f^2*x*Log[1 + I*Cos[c
+ d*x] + Sin[c + d*x]]*Sin[(c + d*x)/2] + (64*I)*f^2*PolyLog[2, (-I)*Cos[c
+ d*x] - Sin[c + d*x]]*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) - 6*d^2*e^2*Si
n[(3*(c + d*x))/2] + 14*d*e*f*Sin[(3*(c + d*x))/2] + 15*f^2*Sin[(3*(c + d*x
))/2] - 12*d^2*e*f*x*Sin[(3*(c + d*x))/2] + 14*d*f^2*x*Sin[(3*(c + d*x))/2]
 - 6*d^2*f^2*x^2*Sin[(3*(c + d*x))/2] + 2*d^2*e^2*Sin[(5*(c + d*x))/2] + 2*
d*e*f*Sin[(5*(c + d*x))/2] - f^2*Sin[(5*(c + d*x))/2] + 4*d^2*e*f*x*Sin[(5*
(c + d*x))/2] + 2*d*f^2*x*Sin[(5*(c + d*x))/2] + 2*d^2*f^2*x^2*Sin[(5*(c +
d*x))/2])/(a*d^3*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]))
```

fricas [B] time = 0.57, size = 844, normalized size = 3.04

$$\frac{2\,d^3f^2x^3+4\,d^2e^2+\left(2\,d^2f^2x^2+2\,d^2e^2-2\,def-f^2+2\left(2\,d^2ef-df^2\right)x\right)\cos\left(dx+c\right)^3-7\,def+2\left(3\,d^3ef+2\,d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*d^3*f^2*x^3 + 4*d^2*e^2 + (2*d^2*f^2*x^2 + 2*d^2*e^2 - 2*d*e*f - f^2
 + 2*(2*d^2*e*f - d*f^2)*x)*cos(d*x + c)^3 - 7*d*e*f + 2*(3*d^3*e*f + 2*d^2
*f^2)*x^2 + 2*(2*d^2*f^2*x^2 + 2*d^2*e^2 + 3*d*e*f - 4*f^2 + (4*d^2*e*f + 3
*d*f^2)*x)*cos(d*x + c)^2 + (6*d^3*e^2 + 8*d^2*e*f - 7*d*f^2)*x + (2*d^3*f^
2*x^3 + 6*d^2*e^2 + d*e*f + 6*(d^3*e*f + d^2*f^2)*x^2 - 7*f^2 + (6*d^3*e^2
+ 12*d^2*e*f + d*f^2)*x)*cos(d*x + c) + (8*I*f^2*cos(d*x + c) + 8*I*f^2*sin
(d*x + c) + 8*I*f^2)*dilog(I*cos(d*x + c) - sin(d*x + c)) + (-8*I*f^2*cos(d
*x + c) - 8*I*f^2*sin(d*x + c) - 8*I*f^2)*dilog(-I*cos(d*x + c) - sin(d*x +
 c)) - 8*(d*e*f - c*f^2 + (d*e*f - c*f^2)*cos(d*x + c) + (d*e*f - c*f^2)*si
n(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c) + I) - 8*(d*f^2*x + c*f^2 + (
d*f^2*x + c*f^2)*cos(d*x + c) + (d*f^2*x + c*f^2)*sin(d*x + c))*log(I*cos(d
*x + c) + sin(d*x + c) + 1) - 8*(d*f^2*x + c*f^2 + (d*f^2*x + c*f^2)*cos(d*
x + c) + (d*f^2*x + c*f^2)*sin(d*x + c))*log(-I*cos(d*x + c) + sin(d*x + c)
 + 1) - 8*(d*e*f - c*f^2 + (d*e*f - c*f^2)*cos(d*x + c) + (d*e*f - c*f^2)*s
in(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + I) + (2*d^3*f^2*x^3 - 4*d
^2*e^2 - 7*d*e*f + 2*(3*d^3*e*f - 2*d^2*f^2)*x^2 - (2*d^2*f^2*x^2 + 2*d^2*e
^2 + 2*d*e*f - f^2 + 2*(2*d^2*e*f + d*f^2)*x)*cos(d*x + c)^2 + (6*d^3*e^2 -
```

```
8*d^2*e*f - 7*d*f^2)*x + (2*d^2*f^2*x^2 + 2*d^2*e^2 - 8*d*e*f - 7*f^2 + 4*
(d^2*e*f - 2*d*f^2)*x)*cos(d*x + c))*sin(d*x + c))/(a*d^3*cos(d*x + c) + a*
d^3*sin(d*x + c) + a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \sin(dx+c)^3}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sin(d*x + c)^3/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.71, size = 481, normalized size = 1.73

$$\frac{f^2x^3}{2a}+\frac{3fe\,x^2}{2a}+\frac{3e^2x}{2a}+\frac{\left(f^2x^2d^2+2d^2efx+2id\,f^2x+d^2e^2+2idef-2f^2\right)\mathrm{e}^{i(dx+c)}}{2d^3a}+\frac{\left(f^2x^2d^2+2d^2efx-2id\,f^2x+\right.}{2d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sin(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] 1/2/a*f^2*x^3+3/2/a*f*e*x^2+3/2/a*e^2*x+1/2*(f^2*x^2*d^2+2*I*d*f^2*x+2*d^2*
e*f*x+2*I*d*e*f+d^2*e^2-2*f^2)/d^3/a*exp(I*(d*x+c))+1/2*(f^2*x^2*d^2-2*I*d*
f^2*x+2*d^2*e*f*x-2*I*d*e*f+d^2*e^2-2*f^2)/d^3/a*exp(-I*(d*x+c))+2*(f^2*x^2
+2*e*f*x+e^2)/d/a/(exp(I*(d*x+c))+I)-4/a/d^2*f*ln(exp(I*(d*x+c))+I)*e+4/a/d
^2*f*ln(exp(I*(d*x+c)))*e+4*I/a/d^2*f^2*c*x+2*I/a/d^3*f^2*c^2+4*I*f^2*polyl
og(2,I*exp(I*(d*x+c)))/a/d^3-4/a/d^2*f^2*ln(1-I*exp(I*(d*x+c)))*x-4/a/d^3*f
^2*ln(1-I*exp(I*(d*x+c)))*c+2*I/a/d*f^2*x^2+4/a/d^3*f^2*c*ln(exp(I*(d*x+c))
+I)-4/a/d^3*f^2*c*ln(exp(I*(d*x+c)))-1/4/d^2*f*(f*x+e)/a*cos(2*d*x+2*c)-1/8
*(2*d^2*f^2*x^2+4*d^2*e*f*x+2*d^2*e^2-f^2)/d^3/a*sin(2*d*x+2*c)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sin (c+d\,x)^3\,{\left (e+f\,x\right)}^2}{a+a\,\sin (c+d\,x)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^3*(e + f*x)^2)/(a + a*sin(c + d*x)),x)
[Out] int((sin(c + d*x)^3*(e + f*x)^2)/(a + a*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^{2} \sin ^{3}{\left (c+d x \right)}}{\sin {\left (c+d x \right)}+1}\, dx + \int \frac{f^{2} x^{2} \sin ^{3}{\left (c+d x \right)}}{\sin {\left (c+d x \right)}+1}\, dx + \int \frac{2 e f x \sin ^{3}{\left (c+d x \right)}}{\sin {\left (c+d x \right)}+1}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sin(d*x+c)**3/(a+a*sin(d*x+c)),x)
[Out] (Integral(e**2*sin(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(f**2*x**2*
sin(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(2*e*f*x*sin(c + d*x)**3/(
sin(c + d*x) + 1), x))/a
```

3.193 $\int \frac{(e+fx)\sin^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=158

$$\frac{f\sin^2(c+dx)}{4ad^2}-\frac{f\sin(c+dx)}{ad^2}-\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}+\frac{(e+fx)\cos(c+dx)}{ad}+\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}-\frac{(e+$$

```
[Out] 3/2*e*x/a+3/4*f*x^2/a+(f*x+e)*cos(d*x+c)/a/d+(f*x+e)*cot(1/2*c+1/4*Pi+1/2*d
*x)/a/d-2*f*ln(sin(1/2*c+1/4*Pi+1/2*d*x))/a/d^2-f*sin(d*x+c)/a/d^2-1/2*(f*x
+e)*cos(d*x+c)*sin(d*x+c)/a/d+1/4*f*sin(d*x+c)^2/a/d^2
```

Rubi [A] time = 0.22, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {4515, 3310, 3296, 2637, 3318, 4184, 3475}

$$\frac{f\sin^2(c+dx)}{4ad^2}-\frac{f\sin(c+dx)}{ad^2}-\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}+\frac{(e+fx)\cos(c+dx)}{ad}+\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}-\frac{(e+$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sin[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (3*e*x)/(2*a) + (3*f*x^2)/(4*a) + ((e + f*x)*Cos[c + d*x])/(a*d) + ((e + f*
x)*Cot[c/2 + Pi/4 + (d*x)/2])/(a*d) - (2*f*Log[Sin[c/2 + Pi/4 + (d*x)/2]])/
(a*d^2) - (f*Sin[c + d*x])/(a*d^2) - ((e + f*x)*Cos[c + d*x]*Sin[c + d*x])/
(2*a*d) + (f*Sin[c + d*x]^2)/(4*a*d^2)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
```

```
]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\sin^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)\sin^2(c+dx)\,dx}{a} - \int \frac{(e+fx)\sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$$
$$= -\frac{(e+fx)\cos(c+dx)\sin(c+dx)}{2ad} + \frac{f\sin^2(c+dx)}{4ad^2} + \frac{\int (e+fx)\,dx}{2a} - \frac{\int (e+fx)\sin$$
$$= \frac{ex}{2a} + \frac{fx^2}{4a} + \frac{(e+fx)\cos(c+dx)}{ad} - \frac{(e+fx)\cos(c+dx)\sin(c+dx)}{2ad} + \frac{f\sin^2(c+d}{4ad^2}$$
$$= \frac{3ex}{2a} + \frac{3fx^2}{4a} + \frac{(e+fx)\cos(c+dx)}{ad} - \frac{f\sin(c+dx)}{ad^2} - \frac{(e+fx)\cos(c+dx)\sin(c+}{2ad}$$
$$= \frac{3ex}{2a} + \frac{3fx^2}{4a} + \frac{(e+fx)\cos(c+dx)}{ad} + \frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{f\sin(c+dx)}{ad^2} -$$
$$= \frac{3ex}{2a} + \frac{3fx^2}{4a} + \frac{(e+fx)\cos(c+dx)}{ad} + \frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{2f\log\left(\sin\left(\frac{c}{2}+\right.\right.}{ad^2}$$

Mathematica [A] time = 1.54, size = 298, normalized size = 1.89

$$\frac{\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)\left(\sin\left(\frac{1}{2}(c+dx)\right)\left(2\left(-3c^2f-d(e+fx)\sin(2(c+dx))+6cde-4f\sin(c+dx)\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sin[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((Cos[(c + d*x)/2] + Sin[(c + d*x)/2])*(Sin[(c + d*x)/2]*(8*d*(e + f*x)*Cos
[c + d*x] - f*Cos[2*(c + d*x)] + 2*(-8*d*e + 6*c*d*e + 4*c*f - 3*c^2*f + 6*
d^2*e*x - 4*d*f*x + 3*d^2*f*x^2 - 8*f*Log[Cos[(c + d*x)/2] + Sin[(c + d*x)/
2]] - 4*f*Sin[c + d*x] - d*(e + f*x)*Sin[2*(c + d*x)])) + Cos[(c + d*x)/2]*
(8*d*(e + f*x)*Cos[c + d*x] - f*Cos[2*(c + d*x)] + 2*(6*c*d*e + 4*c*f - 3*c
^2*f + 6*d^2*e*x + 4*d*f*x + 3*d^2*f*x^2 - 8*f*Log[Cos[(c + d*x)/2] + Sin[(
c + d*x)/2]] - 4*f*Sin[c + d*x] - d*(e + f*x)*Sin[2*(c + d*x)]))))/(8*a*d^2
*(1 + Sin[c + d*x]))
```

fricas [A] time = 0.50, size = 250, normalized size = 1.58

$$\frac{6\,d^2fx^2 + 2\left(2\,dfx + 2\,de - f\right)\cos\left(dx+c\right)^3 + 2\left(4\,dfx + 4\,de + 3\,f\right)\cos\left(dx+c\right)^2 + 8\,de + 4\left(3\,d^2e + 2\,df\right)x + \left(6\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/8*(6*d^2*f*x^2 + 2*(2*d*f*x + 2*d*e - f)*cos(d*x + c)^3 + 2*(4*d*f*x + 4*
d*e + 3*f)*cos(d*x + c)^2 + 8*d*e + 4*(3*d^2*e + 2*d*f)*x + (6*d^2*f*x^2 +
12*d*e + 12*(d^2*e + d*f)*x + f)*cos(d*x + c) - 8*(f*cos(d*x + c) + f*sin(d
*x + c) + f)*log(sin(d*x + c) + 1) + (6*d^2*f*x^2 - 2*(2*d*f*x + 2*d*e + f)
*cos(d*x + c)^2 - 8*d*e + 4*(3*d^2*e - 2*d*f)*x + 4*(d*f*x + d*e - 2*f)*cos
(d*x + c) - 7*f)*sin(d*x + c) - 7*f)/(a*d^2*cos(d*x + c) + a*d^2*sin(d*x +
c) + a*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.29, size = 662, normalized size = 4.19

$$\frac{3e\arctan\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{ad}+\frac{2e}{ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{f\,x^2}{2a\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{}{a\left(1+\tan^2\left(\frac{dx}{2}+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sin(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] 3/a*e/d*arctan(tan(1/2*d*x+1/2*c))+2/a*e/d/(tan(1/2*d*x+1/2*c)+1)+1/2/a*f/(
1+tan(1/2*d*x+1/2*c)^2)/(tan(1/2*d*x+1/2*c)+1)*x^2+1/a*f/(1+tan(1/2*d*x+1/2
*c)^2)/(tan(1/2*d*x+1/2*c)+1)*x/d+1/2/a*f/(1+tan(1/2*d*x+1/2*c)^2)/(tan(1/2
*d*x+1/2*c)+1)*x^2*tan(1/2*d*x+1/2*c)+1/2/a*f/(1+tan(1/2*d*x+1/2*c)^2)/(tan
(1/2*d*x+1/2*c)+1)*x^2*tan(1/2*d*x+1/2*c)^2+1/2/a*f/(1+tan(1/2*d*x+1/2*c)^2
)/(tan(1/2*d*x+1/2*c)+1)*x^2*tan(1/2*d*x+1/2*c)^3-1/a*f/(1+tan(1/2*d*x+1/2*
c)^2)/(tan(1/2*d*x+1/2*c)+1)*x/d*tan(1/2*d*x+1/2*c)+1/a*f/(1+tan(1/2*d*x+1/
2*c)^2)/(tan(1/2*d*x+1/2*c)+1)*x/d*tan(1/2*d*x+1/2*c)^2-1/a*f/(1+tan(1/2*d*
x+1/2*c)^2)/(tan(1/2*d*x+1/2*c)+1)*x/d*tan(1/2*d*x+1/2*c)^3-2/a*f/d^2*ln(ta
n(1/2*d*x+1/2*c)+1)+1/a*f/d^2*ln(1+tan(1/2*d*x+1/2*c)^2)+1/a*e/d/(1+tan(1/2
*d*x+1/2*c)^2)^2*tan(1/2*d*x+1/2*c)^3+2/a*e/d/(1+tan(1/2*d*x+1/2*c)^2)^2*ta
n(1/2*d*x+1/2*c)^2-1/a*e/d/(1+tan(1/2*d*x+1/2*c)^2)^2*tan(1/2*d*x+1/2*c)+2/
a*e/d/(1+tan(1/2*d*x+1/2*c)^2)^2-1/2/a*f/d*cos(d*x+c)*sin(d*x+c)*x+1/4*f*x^
2/a-1/4/a*f/d^2*c^2+1/4*f*sin(d*x+c)^2/a/d^2-f*sin(d*x+c)/a/d^2+1/a*f/d*cos
(d*x+c)*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [B] time = 1.94, size = 246, normalized size = 1.56

$$e^{c\,1i+d\,x\,1i}\,\left(\frac{d\,e+f\,1i}{2\,a\,d^2}+\frac{f\,x}{2\,a\,d}\right)-e^{-c\,1i-d\,x\,1i}\,\left(\frac{-d\,e+f\,1i}{2\,a\,d^2}-\frac{f\,x}{2\,a\,d}\right)+e^{-c\,2i-d\,x\,2i}\,\left(\frac{\left(-2\,d\,e+f\,1i\right)\,1i}{16\,a\,d^2}-\frac{f\,x\,1i}{8\,a\,d}\right)+e^{c\,2i+d\,x\,2i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^3*(e + f*x))/(a + a*sin(c + d*x)),x)
```

```
[Out] exp(c*1i + d*x*1i)*((f*1i + d*e)/(2*a*d^2) + (f*x)/(2*a*d)) - exp(- c*1i -
d*x*1i)*((f*1i - d*e)/(2*a*d^2) - (f*x)/(2*a*d)) + exp(- c*2i - d*x*2i)*(((
f*1i - 2*d*e)*1i)/(16*a*d^2) - (f*x*1i)/(8*a*d)) + exp(c*2i + d*x*2i)*(((f*
1i + 2*d*e)*1i)/(16*a*d^2) + (f*x*1i)/(8*a*d)) + (3*f*x^2)/(4*a) - (2*f*log
(exp(c*1i)*exp(d*x*1i) + 1i))/(a*d^2) + (2*(e + f*x))/(a*d*(exp(c*1i + d*x*
1i) + 1i)) + (x*(f*4i + 3*d*e))/(2*a*d)
```

sympy [A] time = 8.32, size = 4653, normalized size = 29.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((6*d**2*e*x*tan(c/2 + d*x/2)**5/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4
*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c
/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 6*d**2*e*x*tan(c/2
 + d*x/2)**4/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 +
 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan
(c/2 + d*x/2) + 4*a*d**2) + 12*d**2*e*x*tan(c/2 + d*x/2)**3/(4*a*d**2*tan(c
/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**
3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) +
12*d**2*e*x*tan(c/2 + d*x/2)**2/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*ta
n(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2
)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 6*d**2*e*x*tan(c/2 + d*x/2)/
```

```
(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan
(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2)
 + 4*a*d**2) + 6*d**2*e*x/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2
+ d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 +
 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 3*d**2*f*x**2*tan(c/2 + d*x/2)**5/
(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan
(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2)
 + 4*a*d**2) + 3*d**2*f*x**2*tan(c/2 + d*x/2)**4/(4*a*d**2*tan(c/2 + d*x/2)
**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**
2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 6*d**2*f*x*
*2*tan(c/2 + d*x/2)**3/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d
*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*
a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 6*d**2*f*x**2*tan(c/2 + d*x/2)**2/(4*
a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/
2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) +
4*a*d**2) + 3*d**2*f*x**2*tan(c/2 + d*x/2)/(4*a*d**2*tan(c/2 + d*x/2)**5 +
4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(
c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 3*d**2*f*x**2/(4*
a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/
2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) +
4*a*d**2) + 12*d*e*tan(c/2 + d*x/2)**4/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*
d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2
+ d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 12*d*e*tan(c/2 + d*x/
2)**3/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d*
*2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 +
d*x/2) + 4*a*d**2) + 20*d*e*tan(c/2 + d*x/2)**2/(4*a*d**2*tan(c/2 + d*x/2)*
*5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2
*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 4*d*e*tan(c/
2 + d*x/2)/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8
*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c
/2 + d*x/2) + 4*a*d**2) + 16*d*e/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*t
an(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/
2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) - 8*d*f*x*tan(c/2 + d*x/2)**5
/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*ta
n(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2
) + 4*a*d**2) + 4*d*f*x*tan(c/2 + d*x/2)**4/(4*a*d**2*tan(c/2 + d*x/2)**5 +
 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan
(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) - 4*d*f*x*tan(c/2
+ d*x/2)**3/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 +
8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(
c/2 + d*x/2) + 4*a*d**2) + 4*d*f*x*tan(c/2 + d*x/2)**2/(4*a*d**2*tan(c/2 +
d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8
*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) - 4*d*f
*x*tan(c/2 + d*x/2)/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/
2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d
```

```
**2*tan(c/2 + d*x/2) + 4*a*d**2) + 8*d*f*x/(4*a*d**2*tan(c/2 + d*x/2)**5 +
4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(
c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) - 8*f*log(tan(c/2 +
 d*x/2) + 1)*tan(c/2 + d*x/2)**5/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*t
an(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/
2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) - 8*f*log(tan(c/2 + d*x/2) +
1)*tan(c/2 + d*x/2)**4/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d
*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*
a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) - 16*f*log(tan(c/2 + d*x/2) + 1)*tan(c/
2 + d*x/2)**3/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4
+ 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*ta
n(c/2 + d*x/2) + 4*a*d**2) - 16*f*log(tan(c/2 + d*x/2) + 1)*tan(c/2 + d*x/2
)**2/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**
2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d
*x/2) + 4*a*d**2) - 8*f*log(tan(c/2 + d*x/2) + 1)*tan(c/2 + d*x/2)/(4*a*d**
2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d
*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d
**2) - 8*f*log(tan(c/2 + d*x/2) + 1)/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d*
*2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 +
d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 4*f*log(tan(c/2 + d*x/2
)**2 + 1)*tan(c/2 + d*x/2)**5/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(
c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)*
*2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 4*f*log(tan(c/2 + d*x/2)**2 +
1)*tan(c/2 + d*x/2)**4/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d
*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*
a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) + 8*f*log(tan(c/2 + d*x/2)**2 + 1)*tan(
c/2 + d*x/2)**3/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**
4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*
tan(c/2 + d*x/2) + 4*a*d**2) + 8*f*log(tan(c/2 + d*x/2)**2 + 1)*tan(c/2 + d
*x/2)**2/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a
*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2
 + d*x/2) + 4*a*d**2) + 4*f*log(tan(c/2 + d*x/2)**2 + 1)*tan(c/2 + d*x/2)/(
4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(
c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2)
+ 4*a*d**2) + 4*f*log(tan(c/2 + d*x/2)**2 + 1)/(4*a*d**2*tan(c/2 + d*x/2)**
5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*
tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) - 8*f*tan(c/2 +
 d*x/2)**4/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8
*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c
/2 + d*x/2) + 4*a*d**2) - 4*f*tan(c/2 + d*x/2)**3/(4*a*d**2*tan(c/2 + d*x/2
)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d*
*2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2) - 4*f*tan(c/
2 + d*x/2)**2/(4*a*d**2*tan(c/2 + d*x/2)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4
+ 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2*ta
n(c/2 + d*x/2) + 4*a*d**2) - 8*f*tan(c/2 + d*x/2)/(4*a*d**2*tan(c/2 + d*x/2
```

```
)**5 + 4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**3 + 8*a*d*
*2*tan(c/2 + d*x/2)**2 + 4*a*d**2*tan(c/2 + d*x/2) + 4*a*d**2), Ne(d, 0)),
((e*x + f*x**2/2)*sin(c)**3/(a*sin(c) + a), True))
```

3.194 $\int \frac{\sin^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=75

$$\frac{2\cos(c+dx)}{ad}+\frac{\sin^2(c+dx)\cos(c+dx)}{d(a\sin(c+dx)+a)}-\frac{3\sin(c+dx)\cos(c+dx)}{2ad}+\frac{3x}{2a}$$

```
[Out] 3/2*x/a+2*cos(d*x+c)/a/d-3/2*cos(d*x+c)*sin(d*x+c)/a/d+cos(d*x+c)*sin(d*x+c
)^2/d/(a+a*sin(d*x+c))
```

Rubi [A] time = 0.06, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2767, 2734}

$$\frac{2\cos(c+dx)}{ad}+\frac{\sin^2(c+dx)\cos(c+dx)}{d(a\sin(c+dx)+a)}-\frac{3\sin(c+dx)\cos(c+dx)}{2ad}+\frac{3x}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[c + d*x]^3/(a + a*Sin[c + d*x]),x]
```

```
[Out] (3*x)/(2*a) + (2*Cos[c + d*x])/(a*d) - (3*Cos[c + d*x]*Sin[c + d*x])/(2*a*d
) + (Cos[c + d*x]*Sin[c + d*x]^2)/(d*(a + a*Sin[c + d*x]))
```

Rule 2734

```
Int[((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)
*(x_)]), x_Symbol] :> Simp[((2*a*c + b*d)*x)/2, x] + (-Simp[((b*c + a*d)*Co
s[e + f*x])/f, x] - Simp[(b*d*Cos[e + f*x]*Sin[e + f*x])/(2*f), x]) /; Free
Q[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2767

```
Int[((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)/((a_) + (b_.)*sin[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[((b*c - a*d)*Cos[e + f*x]*(c + d*Sin[e + f
*x])^(n - 1))/(a*f*(a + b*Sin[e + f*x])), x] - Dist[d/(a*b), Int[(c + d*Sin
[e + f*x])^(n - 2)*Simp[b*d*(n - 1) - a*c*n + (b*c*(n - 1) - a*d*n)*Sin[e +
 f*x], x], x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && E
qQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && GtQ[n, 1] && (IntegerQ[2*n] || EqQ
[c, 0])
```

Rubi steps

$$\int \frac{\sin^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\cos(c+dx)\sin^2(c+dx)}{d(a+a\sin(c+dx))} - \frac{\int \sin(c+dx)(2a-3a\sin(c+dx))\,dx}{a^2}$$
$$= \frac{3x}{2a} + \frac{2\cos(c+dx)}{ad} - \frac{3\cos(c+dx)\sin(c+dx)}{2ad} + \frac{\cos(c+dx)\sin^2(c+dx)}{d(a+a\sin(c+dx))}$$

Mathematica [A] time = 0.20, size = 117, normalized size = 1.56

$$\frac{\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)\left(\sin\left(\frac{1}{2}(c+dx)\right)(-\sin(2(c+dx))+4\cos(c+dx)+6c+6dx-8)+\cos\left(\frac{1}{2}(\right.\right.}{4ad(\sin(c+dx)+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[c + d*x]^3/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((Cos[(c + d*x)/2] + Sin[(c + d*x)/2])*(Sin[(c + d*x)/2]*(-8 + 6*c + 6*d*x
+ 4*Cos[c + d*x] - Sin[2*(c + d*x)]) + Cos[(c + d*x)/2]*(6*c + 6*d*x + 4*Co
s[c + d*x] - Sin[2*(c + d*x)])))/(4*a*d*(1 + Sin[c + d*x]))
```

fricas [A] time = 0.47, size = 92, normalized size = 1.23

$$\frac{\cos(dx+c)^3+3\,dx+3\,(dx+1)\cos(dx+c)+2\,\cos(dx+c)^2+\left(3\,dx-\cos(dx+c)^2+\cos(dx+c)-2\right)\sin(d}{2\,(ad\cos(dx+c)+ad\sin(dx+c)+ad)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(cos(d*x + c)^3 + 3*d*x + 3*(d*x + 1)*cos(d*x + c) + 2*cos(d*x + c)^2 +
 (3*d*x - cos(d*x + c)^2 + cos(d*x + c) - 2)*sin(d*x + c) + 2)/(a*d*cos(d*x
 + c) + a*d*sin(d*x + c) + a*d)
```

giac [A] time = 0.40, size = 91, normalized size = 1.21

$$\frac{\frac{3\,(dx+c)}{a}+\frac{2\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3+2\,\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2-\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+2\right)}{\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2+1\right)^2a}+\frac{4}{a\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+1\right)}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(3*(d*x + c)/a + 2*(tan(1/2*d*x + 1/2*c)^3 + 2*tan(1/2*d*x + 1/2*c)^2 -
 tan(1/2*d*x + 1/2*c) + 2)/((tan(1/2*d*x + 1/2*c)^2 + 1)^2*a) + 4/(a*(tan(1
/2*d*x + 1/2*c) + 1)))/d
```

maple [B] time = 0.06, size = 163, normalized size = 2.17

$$\frac{\tan^3\left(\frac{dx}{2}+\frac{c}{2}\right)}{ad\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}+\frac{2\left(\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{ad\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}-\frac{\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}{ad\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}+\frac{2}{ad\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}+\frac{3\arctan\left(\cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] 1/a/d/(1+tan(1/2*d*x+1/2*c)^2)^2*tan(1/2*d*x+1/2*c)^3+2/a/d/(1+tan(1/2*d*x+
1/2*c)^2)^2*tan(1/2*d*x+1/2*c)^2-1/a/d/(1+tan(1/2*d*x+1/2*c)^2)^2*tan(1/2*d
*x+1/2*c)+2/a/d/(1+tan(1/2*d*x+1/2*c)^2)^2+3/a/d*arctan(tan(1/2*d*x+1/2*c))
+2/a/d/(tan(1/2*d*x+1/2*c)+1)
```

maxima [B] time = 0.67, size = 212, normalized size = 2.83

$$\frac{\frac{\frac{\sin(dx+c)}{\cos(dx+c)+1}+\frac{5\sin(dx+c)^2}{(\cos(dx+c)+1)^2}+\frac{3\sin(dx+c)^3}{(\cos(dx+c)+1)^3}+\frac{3\sin(dx+c)^4}{(\cos(dx+c)+1)^4}+4}{a+\frac{a\sin(dx+c)}{\cos(dx+c)+1}+\frac{2a\sin(dx+c)^2}{(\cos(dx+c)+1)^2}+\frac{2a\sin(dx+c)^3}{(\cos(dx+c)+1)^3}+\frac{a\sin(dx+c)^4}{(\cos(dx+c)+1)^4}+\frac{a\sin(dx+c)^5}{(\cos(dx+c)+1)^5}}+\frac{3\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{a}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] ((sin(d*x + c)/(cos(d*x + c) + 1) + 5*sin(d*x + c)^2/(cos(d*x + c) + 1)^2 +
 3*sin(d*x + c)^3/(cos(d*x + c) + 1)^3 + 3*sin(d*x + c)^4/(cos(d*x + c) + 1
)^4 + 4)/(a + a*sin(d*x + c)/(cos(d*x + c) + 1) + 2*a*sin(d*x + c)^2/(cos(d
*x + c) + 1)^2 + 2*a*sin(d*x + c)^3/(cos(d*x + c) + 1)^3 + a*sin(d*x + c)^4
/(cos(d*x + c) + 1)^4 + a*sin(d*x + c)^5/(cos(d*x + c) + 1)^5) + 3*arctan(s
in(d*x + c)/(cos(d*x + c) + 1))/a)/d
```

mupad [B] time = 3.29, size = 92, normalized size = 1.23

$$\frac{3\,x}{2\,a}+\frac{3\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^4+3\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^3+5\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^2+\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+4}{a\,d\,\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+1\right)\,\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^2+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)^3/(a + a*sin(c + d*x)),x)
```

```
[Out] (3*x)/(2*a) + (tan(c/2 + (d*x)/2) + 5*tan(c/2 + (d*x)/2)^2 + 3*tan(c/2 + (d
*x)/2)^3 + 3*tan(c/2 + (d*x)/2)^4 + 4)/(a*d*(tan(c/2 + (d*x)/2) + 1)*(tan(c
/2 + (d*x)/2)^2 + 1)^2)
```

sympy [A] time = 6.52, size = 1127, normalized size = 15.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((3*d*x*tan(c/2 + d*x/2)**5/(2*a*d*tan(c/2 + d*x/2)**5 + 2*a*d*tan
(c/2 + d*x/2)**4 + 4*a*d*tan(c/2 + d*x/2)**3 + 4*a*d*tan(c/2 + d*x/2)**2 +
2*a*d*tan(c/2 + d*x/2) + 2*a*d) + 3*d*x*tan(c/2 + d*x/2)**4/(2*a*d*tan(c/2
+ d*x/2)**5 + 2*a*d*tan(c/2 + d*x/2)**4 + 4*a*d*tan(c/2 + d*x/2)**3 + 4*a*d
*tan(c/2 + d*x/2)**2 + 2*a*d*tan(c/2 + d*x/2) + 2*a*d) + 6*d*x*tan(c/2 + d*
x/2)**3/(2*a*d*tan(c/2 + d*x/2)**5 + 2*a*d*tan(c/2 + d*x/2)**4 + 4*a*d*tan(
c/2 + d*x/2)**3 + 4*a*d*tan(c/2 + d*x/2)**2 + 2*a*d*tan(c/2 + d*x/2) + 2*a*
d) + 6*d*x*tan(c/2 + d*x/2)**2/(2*a*d*tan(c/2 + d*x/2)**5 + 2*a*d*tan(c/2 +
 d*x/2)**4 + 4*a*d*tan(c/2 + d*x/2)**3 + 4*a*d*tan(c/2 + d*x/2)**2 + 2*a*d*
tan(c/2 + d*x/2) + 2*a*d) + 3*d*x*tan(c/2 + d*x/2)/(2*a*d*tan(c/2 + d*x/2)*
*5 + 2*a*d*tan(c/2 + d*x/2)**4 + 4*a*d*tan(c/2 + d*x/2)**3 + 4*a*d*tan(c/2
+ d*x/2)**2 + 2*a*d*tan(c/2 + d*x/2) + 2*a*d) + 3*d*x/(2*a*d*tan(c/2 + d*x/
2)**5 + 2*a*d*tan(c/2 + d*x/2)**4 + 4*a*d*tan(c/2 + d*x/2)**3 + 4*a*d*tan(c
/2 + d*x/2)**2 + 2*a*d*tan(c/2 + d*x/2) + 2*a*d) + 6*tan(c/2 + d*x/2)**4/(2
*a*d*tan(c/2 + d*x/2)**5 + 2*a*d*tan(c/2 + d*x/2)**4 + 4*a*d*tan(c/2 + d*x/
2)**3 + 4*a*d*tan(c/2 + d*x/2)**2 + 2*a*d*tan(c/2 + d*x/2) + 2*a*d) + 6*tan
(c/2 + d*x/2)**3/(2*a*d*tan(c/2 + d*x/2)**5 + 2*a*d*tan(c/2 + d*x/2)**4 + 4
*a*d*tan(c/2 + d*x/2)**3 + 4*a*d*tan(c/2 + d*x/2)**2 + 2*a*d*tan(c/2 + d*x/
2) + 2*a*d) + 10*tan(c/2 + d*x/2)**2/(2*a*d*tan(c/2 + d*x/2)**5 + 2*a*d*tan
(c/2 + d*x/2)**4 + 4*a*d*tan(c/2 + d*x/2)**3 + 4*a*d*tan(c/2 + d*x/2)**2 +
2*a*d*tan(c/2 + d*x/2) + 2*a*d) + 2*tan(c/2 + d*x/2)/(2*a*d*tan(c/2 + d*x/2
)**5 + 2*a*d*tan(c/2 + d*x/2)**4 + 4*a*d*tan(c/2 + d*x/2)**3 + 4*a*d*tan(c/
2 + d*x/2)**2 + 2*a*d*tan(c/2 + d*x/2) + 2*a*d) + 8/(2*a*d*tan(c/2 + d*x/2)
**5 + 2*a*d*tan(c/2 + d*x/2)**4 + 4*a*d*tan(c/2 + d*x/2)**3 + 4*a*d*tan(c/2
 + d*x/2)**2 + 2*a*d*tan(c/2 + d*x/2) + 2*a*d), Ne(d, 0)), (x*sin(c)**3/(a*
sin(c) + a), True))
```

3.195 $\int \frac{\sin^3(c+dx)}{(e+fx)(a+a\sin(c+dx))} \, dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sin^3(c+dx)}{(e+fx)(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sin(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin^3(c+dx)}{(e+fx)(a+a\sin(c+dx))} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[Sin[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Sin[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sin^3(c+dx)}{(e+fx)(a+a\sin(c+dx))} \, dx = \int \frac{\sin^3(c+dx)}{(e+fx)(a+a\sin(c+dx))} \, dx$$

Mathematica [A] time = 6.75, size = 0, normalized size = 0.00

$$\int \frac{\sin^3(c+dx)}{(e+fx)(a+a\sin(c+dx))} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sin[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Sin[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(\cos\left(dx+c\right)^2-1\right)\sin\left(dx+c\right)}{afx+ae+\left(afx+ae\right)\sin\left(dx+c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(-(cos(d*x + c)^2 - 1)*sin(d*x + c)/(a*f*x + a*e + (a*f*x + a*e)*si
n(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sin(dx+c)^3}{(fx+e)(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sin(d*x + c)^3/((f*x + e)*(a*sin(d*x + c) + a)), x)
```

maple [A] time = 1.05, size = 0, normalized size = 0.00

$$\int \frac{\sin^3(dx+c)}{(fx+e)(a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] int(sin(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sin(c+d\,x)^3}{(e+f\,x)\,(a+a\,\sin(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)^3/((e + f*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] int(sin(c + d*x)^3/((e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)**3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.196 $\int \frac{\sin^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))} dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sin^3(c+dx)}{(e+fx)^2(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sin(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sin^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))} dx$$

Verification is Not applicable to the result.

```
[In] Int[Sin[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
[Out] Defer[Int][Sin[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sin^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))} dx = \int \frac{\sin^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))} dx$$

Mathematica [A] time = 6.19, size = 0, normalized size = 0.00

$$\int \frac{\sin^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sin[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
[Out] Integrate[Sin[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(\cos(dx+c)^2-1\right)\sin(dx+c)}{af^2x^2+2\,aefx+ae^2+\left(af^2x^2+2\,aefx+ae^2\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(-(cos(d*x + c)^2 - 1)*sin(d*x + c)/(a*f^2*x^2 + 2*a*e*f*x + a*e^2
+ (a*f^2*x^2 + 2*a*e*f*x + a*e^2)*sin(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sin(dx+c)^3}{\left(fx+e\right)^2(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sin(d*x + c)^3/((f*x + e)^2*(a*sin(d*x + c) + a)), x)
```

maple [A] time = 1.49, size = 0, normalized size = 0.00

$$\int \frac{\sin^3(dx+c)}{\left(fx+e\right)^2(a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int(sin(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sin(c+d\,x)^3}{\left(e+f\,x\right)^2\,(a+a\,\sin(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)^3/((e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(sin(c + d*x)^3/((e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)**3/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.197 $\int \frac{(e+fx)^3 \csc(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=352

$$-\frac{12f^3\text{Li}_3\left(ie^{i(c+dx)}\right)}{ad^4}-\frac{6if^3\text{Li}_4\left(-e^{i(c+dx)}\right)}{ad^4}+\frac{6if^3\text{Li}_4\left(e^{i(c+dx)}\right)}{ad^4}+\frac{12if^2(e+fx)\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}-\frac{6f^2(e+fx)\text{Li}_3\left(-e^{i(c+dx}\right.}{ad^3}$$

```
[Out] I*(f*x+e)^3/a/d-2*(f*x+e)^3*arctanh(exp(I*(d*x+c)))/a/d+(f*x+e)^3*cot(1/2*c
+1/4*Pi+1/2*d*x)/a/d-6*f*(f*x+e)^2*ln(1-I*exp(I*(d*x+c)))/a/d^2+3*I*f*(f*x+
e)^2*polylog(2,-exp(I*(d*x+c)))/a/d^2+12*I*f^2*(f*x+e)*polylog(2,I*exp(I*(d
*x+c)))/a/d^3-3*I*f*(f*x+e)^2*polylog(2,exp(I*(d*x+c)))/a/d^2-6*f^2*(f*x+e)
*polylog(3,-exp(I*(d*x+c)))/a/d^3-12*f^3*polylog(3,I*exp(I*(d*x+c)))/a/d^4+
6*f^2*(f*x+e)*polylog(3,exp(I*(d*x+c)))/a/d^3-6*I*f^3*polylog(4,-exp(I*(d*x
+c)))/a/d^4+6*I*f^3*polylog(4,exp(I*(d*x+c)))/a/d^4
```

Rubi [A] time = 0.47, antiderivative size = 352, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {4535, 4183, 2531, 6609, 2282, 6589, 3318, 4184, 3717, 2190}

$$\frac{12if^2(e+fx)\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}-\frac{6f^2(e+fx)\text{PolyLog}\left(3,-e^{i(c+dx)}\right)}{ad^3}+\frac{6f^2(e+fx)\text{PolyLog}\left(3,e^{i(c+dx)}\right)}{ad^3}+\frac{3if(e\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csc[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (I*(e + f*x)^3)/(a*d) - (2*(e + f*x)^3*ArcTanh[E^(I*(c + d*x))])/(a*d) + ((
e + f*x)^3*Cot[c/2 + Pi/4 + (d*x)/2])/(a*d) - (6*f*(e + f*x)^2*Log[1 - I*E^
(I*(c + d*x))])/(a*d^2) + ((3*I)*f*(e + f*x)^2*PolyLog[2, -E^(I*(c + d*x))]
)/(a*d^2) + ((12*I)*f^2*(e + f*x)*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^3) -
((3*I)*f*(e + f*x)^2*PolyLog[2, E^(I*(c + d*x))])/(a*d^2) - (6*f^2*(e + f*x
)*PolyLog[3, -E^(I*(c + d*x))])/(a*d^3) - (12*f^3*PolyLog[3, I*E^(I*(c + d*
x))])/(a*d^4) + (6*f^2*(e + f*x)*PolyLog[3, E^(I*(c + d*x))])/(a*d^3) - ((6
*I)*f^3*PolyLog[4, -E^(I*(c + d*x))])/(a*d^4) + ((6*I)*f^3*PolyLog[4, E^(I*
(c + d*x))])/(a*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
```

```
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\csc(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\csc(c+dx)\,dx}{a} - \int \frac{(e+fx)^3}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{\int (e+fx)^3\csc^2\left(\frac{1}{2}\left(c+\frac{\pi}{2}\right)+\frac{dx}{2}\right)dx}{2a} - \frac{(3f)\int (e+$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{3if(e+fx)^2\mathrm{Li}_2\left(-e\right.}{ad^2}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{3if(e+}{}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{6f(e+f}{}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{6f(e+f}{}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{6f(e+f}{}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{6f(e+f}{}$$

Mathematica [A] time = 2.82, size = 443, normalized size = 1.26

$$\frac{\frac{6f(\cos(c)+i\sin(c))\left(\frac{2f(\cos(c)-i(\sin(c)+1))(d(e+fx)\mathrm{Li}_2(-i\cos(c+dx)-\sin(c+dx))-if\mathrm{Li}_3(-i\cos(c+dx)-\sin(c+dx)))}{d^3}-\frac{(\sin(c)+i\cos(c)+1)(e+fx)^2\log(\sin(c+dx)+i\cos(c+dx)+1)}{d}\right.}{\cos(c)+i(\sin(c)+1)}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csc[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)^3*ArcTanh[Cos[c + d*x] + I*Sin[c + d*x]] + ((3*I)*f*(d^2*(e +
 f*x)^2*PolyLog[2, -Cos[c + d*x] - I*Sin[c + d*x]] + (2*I)*d*f*(e + f*x)*Po
lyLog[3, -Cos[c + d*x] - I*Sin[c + d*x]] - 2*f^2*PolyLog[4, -Cos[c + d*x] -
 I*Sin[c + d*x]]))/d^3 - ((3*I)*f*(d^2*(e + f*x)^2*PolyLog[2, Cos[c + d*x]
+ I*Sin[c + d*x]] + (2*I)*d*f*(e + f*x)*PolyLog[3, Cos[c + d*x] + I*Sin[c +
```

```
d*x]] - 2*f^2*PolyLog[4, Cos[c + d*x] + I*Sin[c + d*x]]))/d^3 + (6*f*(Cos[
c] + I*Sin[c])*(((e + f*x)^3*(Cos[c] - I*Sin[c]))/(3*f) - ((e + f*x)^2*Log[
1 + I*Cos[c + d*x] + Sin[c + d*x]]*(1 + I*Cos[c] + Sin[c]))/d + (2*f*(d*(e
+ f*x)*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*x]] - I*f*PolyLog[3, (-I)*C
os[c + d*x] - Sin[c + d*x]])*(Cos[c] - I*(1 + Sin[c])))/d^3))/(Cos[c] + I*(
1 + Sin[c])) - (2*(e + f*x)^3*Sin[(d*x)/2])/((Cos[c/2] + Sin[c/2])*(Cos[(c
+ d*x)/2] + Sin[(c + d*x)/2])))/(a*d)
```

fricas [C] time = 0.66, size = 2914, normalized size = 8.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*d^3*f^3*x^3 + 6*d^3*e*f^2*x^2 + 6*d^3*e^2*f*x + 2*d^3*e^3 + 2*(d^3*f
^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*cos(d*x + c) + (-3*I*d^
2*f^3*x^2 - 6*I*d^2*e*f^2*x - 3*I*d^2*e^2*f + (-3*I*d^2*f^3*x^2 - 6*I*d^2*e
*f^2*x - 3*I*d^2*e^2*f)*cos(d*x + c) + (-3*I*d^2*f^3*x^2 - 6*I*d^2*e*f^2*x
- 3*I*d^2*e^2*f)*sin(d*x + c))*dilog(cos(d*x + c) + I*sin(d*x + c)) + (3*I*
d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^2*f + (3*I*d^2*f^3*x^2 + 6*I*d^2*
e*f^2*x + 3*I*d^2*e^2*f)*cos(d*x + c) + (3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x
+ 3*I*d^2*e^2*f)*sin(d*x + c))*dilog(cos(d*x + c) - I*sin(d*x + c)) + (12*I
*d*f^3*x + 12*I*d*e*f^2 + (12*I*d*f^3*x + 12*I*d*e*f^2)*cos(d*x + c) + (12*
I*d*f^3*x + 12*I*d*e*f^2)*sin(d*x + c))*dilog(I*cos(d*x + c) - sin(d*x + c)
) + (-12*I*d*f^3*x - 12*I*d*e*f^2 + (-12*I*d*f^3*x - 12*I*d*e*f^2)*cos(d*x
+ c) + (-12*I*d*f^3*x - 12*I*d*e*f^2)*sin(d*x + c))*dilog(-I*cos(d*x + c) -
 sin(d*x + c)) + (-3*I*d^2*f^3*x^2 - 6*I*d^2*e*f^2*x - 3*I*d^2*e^2*f + (-3*
I*d^2*f^3*x^2 - 6*I*d^2*e*f^2*x - 3*I*d^2*e^2*f)*cos(d*x + c) + (-3*I*d^2*f
^3*x^2 - 6*I*d^2*e*f^2*x - 3*I*d^2*e^2*f)*sin(d*x + c))*dilog(-cos(d*x + c)
 + I*sin(d*x + c)) + (3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^2*f + (
3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^2*f)*cos(d*x + c) + (3*I*d^2*
f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^2*f)*sin(d*x + c))*dilog(-cos(d*x + c
) - I*sin(d*x + c)) - (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*
e^3 + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*cos(d*x + c
) + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*sin(d*x + c))
*log(cos(d*x + c) + I*sin(d*x + c) + 1) - 6*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*
f^3 + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c) + (d^2*e^2*f - 2*c*d
*e*f^2 + c^2*f^3)*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c) + I) - (d
^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3 + (d^3*f^3*x^3 + 3*d
^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*cos(d*x + c) + (d^3*f^3*x^3 + 3*d^3
*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*sin(d*x + c))*log(cos(d*x + c) - I*si
n(d*x + c) + 1) - 6*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3 +
(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c) + (d^2*f
^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*sin(d*x + c))*log(I*cos(d*x
```

```
 + c) + sin(d*x + c) + 1) - 6*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 -
c^2*f^3 + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c
) + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*sin(d*x + c))*log
(-I*cos(d*x + c) + sin(d*x + c) + 1) + (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e
*f^2 - c^3*f^3 + (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*cos(d*
x + c) + (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*sin(d*x + c))*
log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) + (d^3*e^3 - 3*c*d^2*e^2*
f + 3*c^2*d*e*f^2 - c^3*f^3 + (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^
3*f^3)*cos(d*x + c) + (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*s
in(d*x + c))*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2) + (d^3*f^3*x
^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*
f^3 + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^
2*d*e*f^2 + c^3*f^3)*cos(d*x + c) + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*
e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*sin(d*x + c))*log(-cos(d
*x + c) + I*sin(d*x + c) + 1) - 6*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3 + (d^2
*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c) + (d^2*e^2*f - 2*c*d*e*f^2 + c
^2*f^3)*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + I) + (d^3*f^3*x^
3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f
^3 + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2
*d*e*f^2 + c^3*f^3)*cos(d*x + c) + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e
^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*sin(d*x + c))*log(-cos(d*
x + c) - I*sin(d*x + c) + 1) + (6*I*f^3*cos(d*x + c) + 6*I*f^3*sin(d*x + c)
 + 6*I*f^3)*polylog(4, cos(d*x + c) + I*sin(d*x + c)) + (-6*I*f^3*cos(d*x +
 c) - 6*I*f^3*sin(d*x + c) - 6*I*f^3)*polylog(4, cos(d*x + c) - I*sin(d*x +
 c)) + (6*I*f^3*cos(d*x + c) + 6*I*f^3*sin(d*x + c) + 6*I*f^3)*polylog(4, -
cos(d*x + c) + I*sin(d*x + c)) + (-6*I*f^3*cos(d*x + c) - 6*I*f^3*sin(d*x +
 c) - 6*I*f^3)*polylog(4, -cos(d*x + c) - I*sin(d*x + c)) + 6*(d*f^3*x + d*
e*f^2 + (d*f^3*x + d*e*f^2)*cos(d*x + c) + (d*f^3*x + d*e*f^2)*sin(d*x + c)
)*polylog(3, cos(d*x + c) + I*sin(d*x + c)) + 6*(d*f^3*x + d*e*f^2 + (d*f^3
*x + d*e*f^2)*cos(d*x + c) + (d*f^3*x + d*e*f^2)*sin(d*x + c))*polylog(3, c
os(d*x + c) - I*sin(d*x + c)) - 12*(f^3*cos(d*x + c) + f^3*sin(d*x + c) + f
^3)*polylog(3, I*cos(d*x + c) - sin(d*x + c)) - 12*(f^3*cos(d*x + c) + f^3*
sin(d*x + c) + f^3)*polylog(3, -I*cos(d*x + c) - sin(d*x + c)) - 6*(d*f^3*x
 + d*e*f^2 + (d*f^3*x + d*e*f^2)*cos(d*x + c) + (d*f^3*x + d*e*f^2)*sin(d*x
 + c))*polylog(3, -cos(d*x + c) + I*sin(d*x + c)) - 6*(d*f^3*x + d*e*f^2 +
(d*f^3*x + d*e*f^2)*cos(d*x + c) + (d*f^3*x + d*e*f^2)*sin(d*x + c))*polylo
g(3, -cos(d*x + c) - I*sin(d*x + c)) - 2*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3
*d^3*e^2*f*x + d^3*e^3)*sin(d*x + c))/(a*d^4*cos(d*x + c) + a*d^4*sin(d*x +
 c) + a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\csc\left(dx+c\right)}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*csc(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.41, size = 1151, normalized size = 3.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] -12/a/d^2*f^2*e*ln(1-I*exp(I*(d*x+c)))*x-12/a/d^3*f^2*e*ln(1-I*exp(I*(d*x+c
)))*c-12/a/d^3*f^2*e*c*ln(exp(I*(d*x+c)))-6*I/a/d^3*f^3*c^2*x+12*I/a/d^3*f^
2*e*polylog(2,I*exp(I*(d*x+c)))+6*I/a/d*f^2*e*x^2+6*I/a/d^3*f^2*e*c^2+2*(f^
3*x^3+3*e*f^2*x^2+3*e^2*f*x+e^3)/d/a/(exp(I*(d*x+c))+I)+12*I/a/d^2*f^2*e*c*
x+6/a/d^2*f*ln(exp(I*(d*x+c)))*e^2+6/a/d^4*f^3*c^2*ln(exp(I*(d*x+c)))-6/a/d
^4*f^3*c^2*ln(exp(I*(d*x+c))+I)+2*I/a/d*f^3*x^3-4*I/a/d^4*f^3*c^3-6/a/d^2*f
*ln(exp(I*(d*x+c))+I)*e^2+1/a/d*e^3*ln(exp(I*(d*x+c))-1)-1/a/d*e^3*ln(exp(I
*(d*x+c))+1)-6/a/d^2*f^3*ln(1-I*exp(I*(d*x+c)))*x^2-12*f^3*polylog(3,I*exp(
I*(d*x+c)))/a/d^4+6*I*f^3*polylog(4,exp(I*(d*x+c)))/a/d^4-1/a/d^4*f^3*c^3*l
n(exp(I*(d*x+c))-1)+6/a/d^3*e*f^2*polylog(3,exp(I*(d*x+c)))-6/a/d^3*e*f^2*p
olylog(3,-exp(I*(d*x+c)))+6/a/d^3*f^3*polylog(3,exp(I*(d*x+c)))*x-6/a/d^3*f
^3*polylog(3,-exp(I*(d*x+c)))*x-6*I*f^3*polylog(4,-exp(I*(d*x+c)))/a/d^4+6/
a/d^4*f^3*ln(1-I*exp(I*(d*x+c)))*c^2-1/a/d*f^3*ln(exp(I*(d*x+c))+1)*x^3+1/a
/d*f^3*ln(1-exp(I*(d*x+c)))*x^3+1/a/d^4*f^3*ln(1-exp(I*(d*x+c)))*c^3+3/a/d^
3*e*f^2*c^2*ln(exp(I*(d*x+c))-1)-3*I/a/d^2*e^2*f*polylog(2,exp(I*(d*x+c)))+
3*I/a/d^2*e^2*f*polylog(2,-exp(I*(d*x+c)))-3*I/a/d^2*f^3*polylog(2,exp(I*(d
*x+c)))*x^2+3*I/a/d^2*f^3*polylog(2,-exp(I*(d*x+c)))*x^2+12/a/d^3*f^2*e*c*l
n(exp(I*(d*x+c))+I)+12*I/a/d^3*f^3*polylog(2,I*exp(I*(d*x+c)))*x+6*I/a/d^2*
e*f^2*polylog(2,-exp(I*(d*x+c)))*x-6*I/a/d^2*e*f^2*polylog(2,exp(I*(d*x+c))
)*x-3/a/d*e*f^2*ln(exp(I*(d*x+c))+1)*x^2+3/a/d*e*f^2*ln(1-exp(I*(d*x+c)))*x
^2+3/a/d*ln(1-exp(I*(d*x+c)))*e^2*f*x-3/a/d*ln(exp(I*(d*x+c))+1)*e^2*f*x-3/
a/d^3*e*f^2*c^2*ln(1-exp(I*(d*x+c)))+3/a/d^2*ln(1-exp(I*(d*x+c)))*c*e^2*f-3
/a/d^2*e^2*f*c*ln(exp(I*(d*x+c))-1)
```

maxima [B] time = 2.48, size = 2778, normalized size = 7.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(3*c*e^2*f*(2/(a*d + a*d*sin(d*x + c)/(cos(d*x + c) + 1)) + log(sin(d*x +
c)/(cos(d*x + c) + 1))/(a*d)) - e^3*(log(sin(d*x + c)/(cos(d*x + c) + 1))/a
```

```
 + 2/(a + a*sin(d*x + c)/(cos(d*x + c) + 1))) + (12*I*c^2*d*e*f^2 - 4*I*c^3
*f^3 + (12*I*d^2*e^2*f - 24*I*c*d*e*f^2 + 12*I*c^2*f^3 + 12*(d^2*e^2*f - 2*
c*d*e*f^2 + c^2*f^3)*cos(d*x + c) + (12*I*d^2*e^2*f - 24*I*c*d*e*f^2 + 12*I
*c^2*f^3)*sin(d*x + c))*arctan2(sin(d*x + c) + 1, cos(d*x + c)) + (-12*I*(d
*x + c)^2*f^3 + (-24*I*d*e*f^2 + 24*I*c*f^3)*(d*x + c) - 12*((d*x + c)^2*f^
3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*cos(d*x + c) + (-12*I*(d*x + c)^2*f^3 +
(-24*I*d*e*f^2 + 24*I*c*f^3)*(d*x + c))*sin(d*x + c))*arctan2(cos(d*x + c),
 sin(d*x + c) + 1) + (6*I*c^2*d*e*f^2 + 2*I*(d*x + c)^3*f^3 - 2*I*c^3*f^3 +
 (6*I*d*e*f^2 - 6*I*c*f^3)*(d*x + c)^2 + (6*I*d^2*e^2*f - 12*I*c*d*e*f^2 +
6*I*c^2*f^3)*(d*x + c) + 2*(3*c^2*d*e*f^2 + (d*x + c)^3*f^3 - c^3*f^3 + 3*(
d*e*f^2 - c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*(d*x +
 c))*cos(d*x + c) + (6*I*c^2*d*e*f^2 + 2*I*(d*x + c)^3*f^3 - 2*I*c^3*f^3 +
(6*I*d*e*f^2 - 6*I*c*f^3)*(d*x + c)^2 + (6*I*d^2*e^2*f - 12*I*c*d*e*f^2 + 6
*I*c^2*f^3)*(d*x + c))*sin(d*x + c))*arctan2(sin(d*x + c), cos(d*x + c) + 1
) + (-6*I*c^2*d*e*f^2 + 2*I*c^3*f^3 - 2*(3*c^2*d*e*f^2 - c^3*f^3)*cos(d*x +
 c) + (-6*I*c^2*d*e*f^2 + 2*I*c^3*f^3)*sin(d*x + c))*arctan2(sin(d*x + c),
cos(d*x + c) - 1) + (2*I*(d*x + c)^3*f^3 + (6*I*d*e*f^2 - 6*I*c*f^3)*(d*x +
 c)^2 + (6*I*d^2*e^2*f - 12*I*c*d*e*f^2 + 6*I*c^2*f^3)*(d*x + c) + 2*((d*x
+ c)^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 +
 c^2*f^3)*(d*x + c))*cos(d*x + c) + (2*I*(d*x + c)^3*f^3 + (6*I*d*e*f^2 - 6
*I*c*f^3)*(d*x + c)^2 + (6*I*d^2*e^2*f - 12*I*c*d*e*f^2 + 6*I*c^2*f^3)*(d*x
 + c))*sin(d*x + c))*arctan2(sin(d*x + c), -cos(d*x + c) + 1) - 4*((d*x + c
)^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + c^
2*f^3)*(d*x + c))*cos(d*x + c) + (-24*I*d*e*f^2 - 24*I*(d*x + c)*f^3 + 24*I
*c*f^3 - 24*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(d*x + c) + (-24*I*d*e*f^2
 - 24*I*(d*x + c)*f^3 + 24*I*c*f^3)*sin(d*x + c))*dilog(I*e^(I*d*x + I*c))
+ (-6*I*d^2*e^2*f + 12*I*c*d*e*f^2 - 6*I*(d*x + c)^2*f^3 - 6*I*c^2*f^3 + (-
12*I*d*e*f^2 + 12*I*c*f^3)*(d*x + c) - 6*(d^2*e^2*f - 2*c*d*e*f^2 + (d*x +
c)^2*f^3 + c^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*cos(d*x + c) + (-6*I*d^
2*e^2*f + 12*I*c*d*e*f^2 - 6*I*(d*x + c)^2*f^3 - 6*I*c^2*f^3 + (-12*I*d*e*f
^2 + 12*I*c*f^3)*(d*x + c))*sin(d*x + c))*dilog(-e^(I*d*x + I*c)) + (6*I*d^
2*e^2*f - 12*I*c*d*e*f^2 + 6*I*(d*x + c)^2*f^3 + 6*I*c^2*f^3 + (12*I*d*e*f^
2 - 12*I*c*f^3)*(d*x + c) + 6*(d^2*e^2*f - 2*c*d*e*f^2 + (d*x + c)^2*f^3 +
c^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*cos(d*x + c) + (6*I*d^2*e^2*f - 12
*I*c*d*e*f^2 + 6*I*(d*x + c)^2*f^3 + 6*I*c^2*f^3 + (12*I*d*e*f^2 - 12*I*c*f
^3)*(d*x + c))*sin(d*x + c))*dilog(e^(I*d*x + I*c)) + (3*c^2*d*e*f^2 + (d*x
 + c)^3*f^3 - c^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*
c*d*e*f^2 + c^2*f^3)*(d*x + c) + (-3*I*c^2*d*e*f^2 - I*(d*x + c)^3*f^3 + I*
c^3*f^3 + (-3*I*d*e*f^2 + 3*I*c*f^3)*(d*x + c)^2 + (-3*I*d^2*e^2*f + 6*I*c*
d*e*f^2 - 3*I*c^2*f^3)*(d*x + c))*cos(d*x + c) + (3*c^2*d*e*f^2 + (d*x + c)
^3*f^3 - c^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e
*f^2 + c^2*f^3)*(d*x + c))*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^
2 + 2*cos(d*x + c) + 1) - (3*c^2*d*e*f^2 + (d*x + c)^3*f^3 - c^3*f^3 + 3*(d
*e*f^2 - c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*(d*x +
c) - (3*I*c^2*d*e*f^2 + I*(d*x + c)^3*f^3 - I*c^3*f^3 + (3*I*d*e*f^2 - 3*I*
```

```
c*f^3)*(d*x + c)^2 + (3*I*d^2*e^2*f - 6*I*c*d*e*f^2 + 3*I*c^2*f^3)*(d*x + c
))*cos(d*x + c) + (3*c^2*d*e*f^2 + (d*x + c)^3*f^3 - c^3*f^3 + 3*(d*e*f^2 -
 c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*(d*x + c))*sin(
d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*cos(d*x + c) + 1) + (6*d^
2*e^2*f - 12*c*d*e*f^2 + 6*(d*x + c)^2*f^3 + 6*c^2*f^3 + 12*(d*e*f^2 - c*f^
3)*(d*x + c) + (-6*I*d^2*e^2*f + 12*I*c*d*e*f^2 - 6*I*(d*x + c)^2*f^3 - 6*I
*c^2*f^3 + (-12*I*d*e*f^2 + 12*I*c*f^3)*(d*x + c))*cos(d*x + c) + 6*(d^2*e^
2*f - 2*c*d*e*f^2 + (d*x + c)^2*f^3 + c^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x +
c))*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1)
 + (12*f^3*cos(d*x + c) + 12*I*f^3*sin(d*x + c) + 12*I*f^3)*polylog(4, -e^(
I*d*x + I*c)) - (12*f^3*cos(d*x + c) + 12*I*f^3*sin(d*x + c) + 12*I*f^3)*po
lylog(4, e^(I*d*x + I*c)) - 24*(I*f^3*cos(d*x + c) - f^3*sin(d*x + c) - f^3
)*polylog(3, I*e^(I*d*x + I*c)) + (12*d*e*f^2 + 12*(d*x + c)*f^3 - 12*c*f^3
 + (-12*I*d*e*f^2 - 12*I*(d*x + c)*f^3 + 12*I*c*f^3)*cos(d*x + c) + 12*(d*e
*f^2 + (d*x + c)*f^3 - c*f^3)*sin(d*x + c))*polylog(3, -e^(I*d*x + I*c)) -
(12*d*e*f^2 + 12*(d*x + c)*f^3 - 12*c*f^3 - (12*I*d*e*f^2 + 12*I*(d*x + c)*
f^3 - 12*I*c*f^3)*cos(d*x + c) + 12*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(d
*x + c))*polylog(3, e^(I*d*x + I*c)) + (-4*I*(d*x + c)^3*f^3 + (-12*I*d*e*f
^2 + 12*I*c*f^3)*(d*x + c)^2 + (-12*I*d^2*e^2*f + 24*I*c*d*e*f^2 - 12*I*c^2
*f^3)*(d*x + c))*sin(d*x + c))/(-2*I*a*d^3*cos(d*x + c) + 2*a*d^3*sin(d*x +
 c) + 2*a*d^3))/d
```

mupad **[F(-1)]** time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sin(c + d*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^3 \csc(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{f^3x^3 \csc(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{3ef^2x^2 \csc(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{3e^2fx \csc(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**3*csc(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f**3*x**3*csc
(c + d*x)/(sin(c + d*x) + 1), x) + Integral(3*e*f**2*x**2*csc(c + d*x)/(sin
(c + d*x) + 1), x) + Integral(3*e**2*f*x*csc(c + d*x)/(sin(c + d*x) + 1), x
))/a
```

3.198 $\int \frac{(e+fx)^2\csc(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=249

$$\frac{4if^2\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}-\frac{2f^2\text{Li}_3\left(-e^{i(c+dx)}\right)}{ad^3}+\frac{2f^2\text{Li}_3\left(e^{i(c+dx)}\right)}{ad^3}+\frac{2if(e+fx)\text{Li}_2\left(-e^{i(c+dx)}\right)}{ad^2}-\frac{2if(e+fx)\text{Li}_2\left(e^{i(c+dx)}\right)}{ad^2}-4$$

```
[Out] I*(f*x+e)^2/a/d-2*(f*x+e)^2*arctanh(exp(I*(d*x+c)))/a/d+(f*x+e)^2*cot(1/2*c
+1/4*Pi+1/2*d*x)/a/d-4*f*(f*x+e)*ln(1-I*exp(I*(d*x+c)))/a/d^2+2*I*f*(f*x+e)
*polylog(2,-exp(I*(d*x+c)))/a/d^2+4*I*f^2*polylog(2,I*exp(I*(d*x+c)))/a/d^3
-2*I*f*(f*x+e)*polylog(2,exp(I*(d*x+c)))/a/d^2-2*f^2*polylog(3,-exp(I*(d*x+
c)))/a/d^3+2*f^2*polylog(3,exp(I*(d*x+c)))/a/d^3
```

Rubi [A] time = 0.33, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423, Rules used = {4535, 4183, 2531, 2282, 6589, 3318, 4184, 3717, 2190, 2279, 2391}

$$\frac{2if(e+fx)\text{PolyLog}\left(2,-e^{i(c+dx)}\right)}{ad^2}-\frac{2if(e+fx)\text{PolyLog}\left(2,e^{i(c+dx)}\right)}{ad^2}+\frac{4if^2\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}-\frac{2f^2\text{PolyLog}(3}{ad^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csc[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (I*(e + f*x)^2)/(a*d) - (2*(e + f*x)^2*ArcTanh[E^(I*(c + d*x))])/(a*d) + ((
e + f*x)^2*Cot[c/2 + Pi/4 + (d*x)/2])/(a*d) - (4*f*(e + f*x)*Log[1 - I*E^(I
*(c + d*x))])/(a*d^2) + ((2*I)*f*(e + f*x)*PolyLog[2, -E^(I*(c + d*x))])/(a
*d^2) + ((4*I)*f^2*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^3) - ((2*I)*f*(e + f
*x)*PolyLog[2, E^(I*(c + d*x))])/(a*d^2) - (2*f^2*PolyLog[3, -E^(I*(c + d*x
))])/(a*d^3) + (2*f^2*PolyLog[3, E^(I*(c + d*x))])/(a*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
```

```
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\csc(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\csc(c+dx)\,dx}{a} - \int \frac{(e+fx)^2}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{\int (e+fx)^2\csc^2\left(\frac{1}{2}\left(c+\frac{\pi}{2}\right)+\frac{dx}{2}\right)dx}{2a} - \frac{(2f)\int (e+f}{}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{2if(e+fx)\mathrm{Li}_2\left(-e^{i(c+}\right.}{ad^2}$$

$$= \frac{i(e+fx)^2}{ad} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{2if(e+f}{}$$

$$= \frac{i(e+fx)^2}{ad} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{4f(e+fx}{}$$

$$= \frac{i(e+fx)^2}{ad} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{4f(e+fx}{}$$

$$= \frac{i(e+fx)^2}{ad} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{4f(e+fx}{}$$

Mathematica [A] time = 2.20, size = 330, normalized size = 1.33

$$\frac{2if\left(d(e+fx)\mathrm{Li}_2\left(-e^{i(c+dx)}\right)+if\mathrm{Li}_3\left(-e^{i(c+dx)}\right)\right)}{d^2} + \frac{2f\left(f\mathrm{Li}_3\left(e^{i(c+dx)}\right)-id(e+fx)\mathrm{Li}_2\left(e^{i(c+dx)}\right)\right)}{d^2} + \frac{4f(\cos(c)+i\sin(c))\left(\frac{f(\cos(c)-i(\sin(c)+1))\mathrm{Li}_2(-i\cos(c+dx)-\sin(}{d^2}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csc[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((e + f*x)^2*Log[1 - E^(I*(c + d*x))] - (e + f*x)^2*Log[1 + E^(I*(c + d*x))
] + ((2*I)*f*(d*(e + f*x)*PolyLog[2, -E^(I*(c + d*x))] + I*f*PolyLog[3, -E^
(I*(c + d*x))]))/d^2 + (2*f*((-I)*d*(e + f*x)*PolyLog[2, E^(I*(c + d*x))] +
 f*PolyLog[3, E^(I*(c + d*x))]))/d^2 + (4*f*(Cos[c] + I*Sin[c])*(((e + f*x)
^2*(Cos[c] - I*Sin[c]))/(2*f) - ((e + f*x)*Log[1 + I*Cos[c + d*x] + Sin[c +
 d*x]]*(1 + I*Cos[c] + Sin[c]))/d + (f*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c
 + d*x]]*(Cos[c] - I*(1 + Sin[c])))/d^2))/(Cos[c] + I*(1 + Sin[c])) - (2*(e
 + f*x)^2*Sin[(d*x)/2])/((Cos[c/2] + Sin[c/2])*(Cos[(c + d*x)/2] + Sin[(c +
 d*x)/2])))/(a*d)
```

fricas [C] time = 0.58, size = 1636, normalized size = 6.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*d^2*f^2*x^2 + 4*d^2*e*f*x + 2*d^2*e^2 + 2*(d^2*f^2*x^2 + 2*d^2*e*f*x
 + d^2*e^2)*cos(d*x + c) + (-2*I*d*f^2*x - 2*I*d*e*f + (-2*I*d*f^2*x - 2*I*
d*e*f)*cos(d*x + c) + (-2*I*d*f^2*x - 2*I*d*e*f)*sin(d*x + c))*dilog(cos(d*
x + c) + I*sin(d*x + c)) + (2*I*d*f^2*x + 2*I*d*e*f + (2*I*d*f^2*x + 2*I*d*
e*f)*cos(d*x + c) + (2*I*d*f^2*x + 2*I*d*e*f)*sin(d*x + c))*dilog(cos(d*x +
 c) - I*sin(d*x + c)) + (4*I*f^2*cos(d*x + c) + 4*I*f^2*sin(d*x + c) + 4*I*
f^2)*dilog(I*cos(d*x + c) - sin(d*x + c)) + (-4*I*f^2*cos(d*x + c) - 4*I*f^
2*sin(d*x + c) - 4*I*f^2)*dilog(-I*cos(d*x + c) - sin(d*x + c)) + (-2*I*d*f
^2*x - 2*I*d*e*f + (-2*I*d*f^2*x - 2*I*d*e*f)*cos(d*x + c) + (-2*I*d*f^2*x
- 2*I*d*e*f)*sin(d*x + c))*dilog(-cos(d*x + c) + I*sin(d*x + c)) + (2*I*d*f
^2*x + 2*I*d*e*f + (2*I*d*f^2*x + 2*I*d*e*f)*cos(d*x + c) + (2*I*d*f^2*x +
2*I*d*e*f)*sin(d*x + c))*dilog(-cos(d*x + c) - I*sin(d*x + c)) - (d^2*f^2*x
^2 + 2*d^2*e*f*x + d^2*e^2 + (d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*cos(d*x
+ c) + (d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*sin(d*x + c))*log(cos(d*x + c)
 + I*sin(d*x + c) + 1) - 4*(d*e*f - c*f^2 + (d*e*f - c*f^2)*cos(d*x + c) +
(d*e*f - c*f^2)*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c) + I) - (d^2
*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2 + (d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*co
s(d*x + c) + (d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*sin(d*x + c))*log(cos(d*
x + c) - I*sin(d*x + c) + 1) - 4*(d*f^2*x + c*f^2 + (d*f^2*x + c*f^2)*cos(d
*x + c) + (d*f^2*x + c*f^2)*sin(d*x + c))*log(I*cos(d*x + c) + sin(d*x + c)
 + 1) - 4*(d*f^2*x + c*f^2 + (d*f^2*x + c*f^2)*cos(d*x + c) + (d*f^2*x + c*
f^2)*sin(d*x + c))*log(-I*cos(d*x + c) + sin(d*x + c) + 1) + (d^2*e^2 - 2*c
*d*e*f + c^2*f^2 + (d^2*e^2 - 2*c*d*e*f + c^2*f^2)*cos(d*x + c) + (d^2*e^2
- 2*c*d*e*f + c^2*f^2)*sin(d*x + c))*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x
+ c) + 1/2) + (d^2*e^2 - 2*c*d*e*f + c^2*f^2 + (d^2*e^2 - 2*c*d*e*f + c^2*f
^2)*cos(d*x + c) + (d^2*e^2 - 2*c*d*e*f + c^2*f^2)*sin(d*x + c))*log(-1/2*c
os(d*x + c) - 1/2*I*sin(d*x + c) + 1/2) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*
d*e*f - c^2*f^2 + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*cos(d*x
 + c) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*sin(d*x + c))*log
(-cos(d*x + c) + I*sin(d*x + c) + 1) - 4*(d*e*f - c*f^2 + (d*e*f - c*f^2)*c
os(d*x + c) + (d*e*f - c*f^2)*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x +
 c) + I) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2 + (d^2*f^2*x^2
+ 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*cos(d*x + c) + (d^2*f^2*x^2 + 2*d^2*e*
f*x + 2*c*d*e*f - c^2*f^2)*sin(d*x + c))*log(-cos(d*x + c) - I*sin(d*x + c)
 + 1) + 2*(f^2*cos(d*x + c) + f^2*sin(d*x + c) + f^2)*polylog(3, cos(d*x +
c) + I*sin(d*x + c)) + 2*(f^2*cos(d*x + c) + f^2*sin(d*x + c) + f^2)*polylo
g(3, cos(d*x + c) - I*sin(d*x + c)) - 2*(f^2*cos(d*x + c) + f^2*sin(d*x + c
```

```
) + f^2)*polylog(3, -cos(d*x + c) + I*sin(d*x + c)) - 2*(f^2*cos(d*x + c) +
 f^2*sin(d*x + c) + f^2)*polylog(3, -cos(d*x + c) - I*sin(d*x + c)) - 2*(d^
2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*sin(d*x + c))/(a*d^3*cos(d*x + c) + a*d^
3*sin(d*x + c) + a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \csc(dx+c)}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*csc(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.24, size = 643, normalized size = 2.58

$$-\frac{f^2\ln\left(1-e^{i(dx+c)}\right)c^2}{a\,d^3}-\frac{f^2\ln\left(e^{i(dx+c)}+1\right)x^2}{ad}+\frac{f^2c^2\ln\left(e^{i(dx+c)}-1\right)}{a\,d^3}+\frac{f^2\ln\left(1-e^{i(dx+c)}\right)x^2}{ad}-\frac{4f\ln\left(e^{i(dx+c)}+i\right)e}{a\,d^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/a/d*e^2*ln(exp(I*(d*x+c))+1)+1/a/d*e^2*ln(exp(I*(d*x+c))-1)-4/a/d^2*f*ln
(exp(I*(d*x+c))+I)*e+4/a/d^2*f*ln(exp(I*(d*x+c)))*e-4/a/d^2*f^2*ln(1-I*exp(
I*(d*x+c)))*x-4/a/d^3*f^2*ln(1-I*exp(I*(d*x+c)))*c+4/a/d^3*f^2*c*ln(exp(I*(
d*x+c))+I)-4/a/d^3*f^2*c*ln(exp(I*(d*x+c)))+2*I/a/d*f^2*x^2+2*I/a/d^3*f^2*c
^2-2/a/d^2*e*f*c*ln(exp(I*(d*x+c))-1)+2/a/d*ln(1-exp(I*(d*x+c)))*e*f*x-2/a/
d*ln(exp(I*(d*x+c))+1)*e*f*x+2/a/d^2*ln(1-exp(I*(d*x+c)))*c*e*f-1/a/d^3*f^2
*ln(1-exp(I*(d*x+c)))*c^2-1/a/d*f^2*ln(exp(I*(d*x+c))+1)*x^2+1/a/d^3*f^2*c^
2*ln(exp(I*(d*x+c))-1)-2*I/a/d^2*e*f*polylog(2,exp(I*(d*x+c)))+2*I/a/d^2*e*
f*polylog(2,-exp(I*(d*x+c)))-2*I/a/d^2*f^2*polylog(2,exp(I*(d*x+c)))*x+2*I/
a/d^2*f^2*polylog(2,-exp(I*(d*x+c)))*x+2*(f^2*x^2+2*e*f*x+e^2)/d/a/(exp(I*(
d*x+c))+I)+4*I/a/d^2*f^2*c*x+1/a/d*f^2*ln(1-exp(I*(d*x+c)))*x^2-2*f^2*polyl
og(3,-exp(I*(d*x+c)))/a/d^3+2*f^2*polylog(3,exp(I*(d*x+c)))/a/d^3+4*I*f^2*p
olylog(2,I*exp(I*(d*x+c)))/a/d^3
```

maxima [B] time = 1.39, size = 1410, normalized size = 5.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(2*c*e*f*(2/(a*d + a*d*sin(d*x + c)/(cos(d*x + c) + 1)) + log(sin(d*x + c)
/(cos(d*x + c) + 1))/(a*d)) - e^2*(log(sin(d*x + c)/(cos(d*x + c) + 1))/a +
 2/(a + a*sin(d*x + c)/(cos(d*x + c) + 1))) + (4*I*c^2*f^2 + (8*I*d*e*f - 8
*I*c*f^2 + 8*(d*e*f - c*f^2)*cos(d*x + c) + (8*I*d*e*f - 8*I*c*f^2)*sin(d*x
 + c))*arctan2(sin(d*x + c) + 1, cos(d*x + c)) - (8*(d*x + c)*f^2*cos(d*x +
 c) + 8*I*(d*x + c)*f^2*sin(d*x + c) + 8*I*(d*x + c)*f^2)*arctan2(cos(d*x +
 c), sin(d*x + c) + 1) + (2*I*(d*x + c)^2*f^2 + 2*I*c^2*f^2 + (4*I*d*e*f -
4*I*c*f^2)*(d*x + c) + 2*((d*x + c)^2*f^2 + c^2*f^2 + 2*(d*e*f - c*f^2)*(d*
x + c))*cos(d*x + c) + (2*I*(d*x + c)^2*f^2 + 2*I*c^2*f^2 + (4*I*d*e*f - 4*
I*c*f^2)*(d*x + c))*sin(d*x + c))*arctan2(sin(d*x + c), cos(d*x + c) + 1) -
 (2*c^2*f^2*cos(d*x + c) + 2*I*c^2*f^2*sin(d*x + c) + 2*I*c^2*f^2)*arctan2(
sin(d*x + c), cos(d*x + c) - 1) + (2*I*(d*x + c)^2*f^2 + (4*I*d*e*f - 4*I*c
*f^2)*(d*x + c) + 2*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*cos(d*x
 + c) + (2*I*(d*x + c)^2*f^2 + (4*I*d*e*f - 4*I*c*f^2)*(d*x + c))*sin(d*x +
 c))*arctan2(sin(d*x + c), -cos(d*x + c) + 1) - 4*((d*x + c)^2*f^2 + 2*(d*e
*f - c*f^2)*(d*x + c))*cos(d*x + c) - (8*f^2*cos(d*x + c) + 8*I*f^2*sin(d*x
 + c) + 8*I*f^2)*dilog(I*e^(I*d*x + I*c)) + (-4*I*d*e*f - 4*I*(d*x + c)*f^2
 + 4*I*c*f^2 - 4*(d*e*f + (d*x + c)*f^2 - c*f^2)*cos(d*x + c) + (-4*I*d*e*f
 - 4*I*(d*x + c)*f^2 + 4*I*c*f^2)*sin(d*x + c))*dilog(-e^(I*d*x + I*c)) + (
4*I*d*e*f + 4*I*(d*x + c)*f^2 - 4*I*c*f^2 + 4*(d*e*f + (d*x + c)*f^2 - c*f^
2)*cos(d*x + c) + (4*I*d*e*f + 4*I*(d*x + c)*f^2 - 4*I*c*f^2)*sin(d*x + c))
*dilog(e^(I*d*x + I*c)) + ((d*x + c)^2*f^2 + c^2*f^2 + 2*(d*e*f - c*f^2)*(d
*x + c) + (-I*(d*x + c)^2*f^2 - I*c^2*f^2 + (-2*I*d*e*f + 2*I*c*f^2)*(d*x +
 c))*cos(d*x + c) + ((d*x + c)^2*f^2 + c^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c
))*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*cos(d*x + c) + 1)
- ((d*x + c)^2*f^2 + c^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c) - (I*(d*x + c)^2
*f^2 + I*c^2*f^2 + (2*I*d*e*f - 2*I*c*f^2)*(d*x + c))*cos(d*x + c) + ((d*x
+ c)^2*f^2 + c^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*sin(d*x + c))*log(cos(d
*x + c)^2 + sin(d*x + c)^2 - 2*cos(d*x + c) + 1) + (4*d*e*f + 4*(d*x + c)*f
^2 - 4*c*f^2 + (-4*I*d*e*f - 4*I*(d*x + c)*f^2 + 4*I*c*f^2)*cos(d*x + c) +
4*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*
x + c)^2 + 2*sin(d*x + c) + 1) - 4*(I*f^2*cos(d*x + c) - f^2*sin(d*x + c) -
 f^2)*polylog(3, -e^(I*d*x + I*c)) - 4*(-I*f^2*cos(d*x + c) + f^2*sin(d*x +
 c) + f^2)*polylog(3, e^(I*d*x + I*c)) + (-4*I*(d*x + c)^2*f^2 + (-8*I*d*e*
f + 8*I*c*f^2)*(d*x + c))*sin(d*x + c))/(-2*I*a*d^2*cos(d*x + c) + 2*a*d^2*
sin(d*x + c) + 2*a*d^2))/d
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sin(c + d*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^2 \csc (c+dx)}{\sin (c+dx)+1}\, dx + \int \frac{f^2 x^2 \csc (c+dx)}{\sin (c+dx)+1}\, dx + \int \frac{2efx \csc (c+dx)}{\sin (c+dx)+1}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**2*csc(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f**2*x**2*csc
(c + d*x)/(sin(c + d*x) + 1), x) + Integral(2*e*f*x*csc(c + d*x)/(sin(c + d
*x) + 1), x))/a
```

3.199 $\int \frac{(e+fx)\csc(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=134

$$\frac{ifLi_2\left(-e^{i(c+dx)}\right)}{ad^2}-\frac{ifLi_2\left(e^{i(c+dx)}\right)}{ad^2}-\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}+\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}-\frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad}$$

```
[Out] -2*(f*x+e)*arctanh(exp(I*(d*x+c)))/a/d+(f*x+e)*cot(1/2*c+1/4*Pi+1/2*d*x)/a/
d-2*f*ln(sin(1/2*c+1/4*Pi+1/2*d*x))/a/d^2+I*f*polylog(2,-exp(I*(d*x+c)))/a/
d^2-I*f*polylog(2,exp(I*(d*x+c)))/a/d^2
```

Rubi [A] time = 0.16, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {4535, 4183, 2279, 2391, 3318, 4184, 3475}

$$\frac{if\text{PolyLog}\left(2,-e^{i(c+dx)}\right)}{ad^2}-\frac{if\text{PolyLog}\left(2,e^{i(c+dx)}\right)}{ad^2}-\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}+\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}-\frac{2(e+\ldots}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csc[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)*ArcTanh[E^(I*(c + d*x))])/(a*d) + ((e + f*x)*Cot[c/2 + Pi/4 +
 (d*x)/2])/(a*d) - (2*f*Log[Sin[c/2 + Pi/4 + (d*x)/2]])/(a*d^2) + (I*f*Poly
Log[2, -E^(I*(c + d*x))])/(a*d^2) - (I*f*PolyLog[2, E^(I*(c + d*x))])/(a*d^
2)
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
```

```
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rubi steps

$$\int \frac{(e+fx)\csc(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)\csc(c+dx)\,dx}{a} - \int \frac{e+fx}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{\int (e+fx)\csc^2\left(\frac{1}{2}\left(c+\frac{\pi}{2}\right)+\frac{dx}{2}\right)dx}{2a} - \frac{f\int \log\left(1-e^{i(c}\right.}{ad}$$

$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{(if)\,\text{Subst}\left(\int \frac{\log(1-x)}{x}\,dx,\right.}{ad^2}$$

$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)\right.}{ad^2}$$

Mathematica [B] time = 1.10, size = 300, normalized size = 2.24

$$\frac{\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)\left(-2d(e+fx)\sin\left(\frac{1}{2}(c+dx)\right)+de\log\left(\tan\left(\frac{1}{2}(c+dx)\right)\right)\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cdots\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csc[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((Cos[(c + d*x)/2] + Sin[(c + d*x)/2])*(-2*d*(e + f*x)*Sin[(c + d*x)/2] + f
*(c + d*x)*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) - 2*f*Log[Cos[(c + d*x)/2]
 + Sin[(c + d*x)/2]]*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) + d*e*Log[Tan[(c
 + d*x)/2]]*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) - c*f*Log[Tan[(c + d*x)/2
]]*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) + f*((c + d*x)*(Log[1 - E^(I*(c +
d*x))] - Log[1 + E^(I*(c + d*x))]) + I*(PolyLog[2, -E^(I*(c + d*x))] - Poly
Log[2, E^(I*(c + d*x))]))*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])))/(a*d^2*(1
 + Sin[c + d*x]))
```

fricas [B] time = 0.54, size = 609, normalized size = 4.54

$$\frac{2dfx+2de+2\left(dfx+de\right)\cos\left(dx+c\right)+\left(-if\cos\left(dx+c\right)-if\sin\left(dx+c\right)-if\right)\mathrm{Li}_2\left(\cos\left(dx+c\right)+i\sin\left(dx\cdots\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*d*f*x + 2*d*e + 2*(d*f*x + d*e)*cos(d*x + c) + (-I*f*cos(d*x + c) -
I*f*sin(d*x + c) - I*f)*dilog(cos(d*x + c) + I*sin(d*x + c)) + (I*f*cos(d*x
 + c) + I*f*sin(d*x + c) + I*f)*dilog(cos(d*x + c) - I*sin(d*x + c)) + (-I*
f*cos(d*x + c) - I*f*sin(d*x + c) - I*f)*dilog(-cos(d*x + c) + I*sin(d*x +
c)) + (I*f*cos(d*x + c) + I*f*sin(d*x + c) + I*f)*dilog(-cos(d*x + c) - I*s
in(d*x + c)) - (d*f*x + d*e + (d*f*x + d*e)*cos(d*x + c) + (d*f*x + d*e)*si
n(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c) + 1) - (d*f*x + d*e + (d*f*x
+ d*e)*cos(d*x + c) + (d*f*x + d*e)*sin(d*x + c))*log(cos(d*x + c) - I*sin(
d*x + c) + 1) + (d*e - c*f + (d*e - c*f)*cos(d*x + c) + (d*e - c*f)*sin(d*x
 + c))*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) + (d*e - c*f + (d*
e - c*f)*cos(d*x + c) + (d*e - c*f)*sin(d*x + c))*log(-1/2*cos(d*x + c) - 1
/2*I*sin(d*x + c) + 1/2) + (d*f*x + c*f + (d*f*x + c*f)*cos(d*x + c) + (d*f
*x + c*f)*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + 1) + (d*f*x +
c*f + (d*f*x + c*f)*cos(d*x + c) + (d*f*x + c*f)*sin(d*x + c))*log(-cos(d*x
 + c) - I*sin(d*x + c) + 1) - 2*(f*cos(d*x + c) + f*sin(d*x + c) + f)*log(s
in(d*x + c) + 1) - 2*(d*f*x + d*e)*sin(d*x + c))/(a*d^2*cos(d*x + c) + a*d^
2*sin(d*x + c) + a*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\csc(dx+c)}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*csc(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.24, size = 245, normalized size = 1.83

$$\frac{2fx+2e}{da\left(e^{i(dx+c)}+i\right)}-\frac{e\ln\left(e^{i(dx+c)}+1\right)}{ad}+\frac{e\ln\left(e^{i(dx+c)}-1\right)}{ad}-\frac{fc\ln\left(e^{i(dx+c)}-1\right)}{a\,d^2}-\frac{if\,\mathrm{polylog}\left(2,e^{i(dx+c)}\right)}{a\,d^2}+\frac{if\,\mathrm{polylog}\left(2,\right.}{a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] 2*(f*x+e)/d/a/(exp(I*(d*x+c))+I)-1/a/d*e*ln(exp(I*(d*x+c))+1)+1/a/d*e*ln(ex
p(I*(d*x+c))-1)-1/a/d^2*f*c*ln(exp(I*(d*x+c))-1)-I*f*polylog(2,exp(I*(d*x+c
)))/a/d^2+I*f*polylog(2,-exp(I*(d*x+c)))/a/d^2-2/a/d^2*f*ln(exp(I*(d*x+c))+
I)+2/a/d^2*f*ln(exp(I*(d*x+c)))-1/a/d*ln(exp(I*(d*x+c))+1)*f*x+1/a/d*ln(1-e
xp(I*(d*x+c)))*f*x+1/a/d^2*ln(1-exp(I*(d*x+c)))*c*f
```

maxima [B] time = 0.91, size = 517, normalized size = 3.86

$$\frac{4\,dfx\cos(dx+c)+4i\,dfx\sin(dx+c)-4i\,de-\left(4\,f\cos(dx+c)+4i\,f\sin(dx+c)+4i\,f\right)\arctan\left(\cos(c)+\sin\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] (4*d*f*x*cos(d*x + c) + 4*I*d*f*x*sin(d*x + c) - 4*I*d*e - (4*f*cos(d*x + c
) + 4*I*f*sin(d*x + c) + 4*I*f)*arctan2(cos(c) + sin(d*x), cos(d*x) + sin(c
)) - (2*I*d*f*x + 2*I*d*e + 2*(d*f*x + d*e)*cos(d*x + c) + (2*I*d*f*x + 2*I
*d*e)*sin(d*x + c))*arctan2(sin(d*x + c), cos(d*x + c) + 1) + (2*d*e*cos(d*
x + c) + 2*I*d*e*sin(d*x + c) + 2*I*d*e)*arctan2(sin(d*x + c), cos(d*x + c)
 - 1) - (2*d*f*x*cos(d*x + c) + 2*I*d*f*x*sin(d*x + c) + 2*I*d*f*x)*arctan2
(sin(d*x + c), -cos(d*x + c) + 1) + (2*f*cos(d*x + c) + 2*I*f*sin(d*x + c)
+ 2*I*f)*dilog(-e^(I*d*x + I*c)) - (2*f*cos(d*x + c) + 2*I*f*sin(d*x + c) +
 2*I*f)*dilog(e^(I*d*x + I*c)) - (d*f*x + d*e + (-I*d*f*x - I*d*e)*cos(d*x
+ c) + (d*f*x + d*e)*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*
```

```
cos(d*x + c) + 1) + (d*f*x + d*e - (I*d*f*x + I*d*e)*cos(d*x + c) + (d*f*x
+ d*e)*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*cos(d*x + c) +
 1) + 2*(I*f*cos(d*x + c) - f*sin(d*x + c) - f)*log(cos(d*x)^2 + cos(c)^2 +
 2*cos(c)*sin(d*x) + sin(d*x)^2 + 2*cos(d*x)*sin(c) + sin(c)^2))/(-2*I*a*d^
2*cos(d*x + c) + 2*a*d^2*sin(d*x + c) + 2*a*d^2)
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.01

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sin(c + d*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e\csc(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{fx\csc(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e*csc(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f*x*csc(c + d*x)
/(sin(c + d*x) + 1), x))/a
```

3.200 $\int \frac{\csc(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=38

$$\frac{\cos(c+dx)}{d(a\sin(c+dx)+a)}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}$$

```
[Out] -arctanh(cos(d*x+c))/a/d+cos(d*x+c)/d/(a+a*sin(d*x+c))
```

Rubi [A] time = 0.05, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {2747, 3770, 2648}

$$\frac{\cos(c+dx)}{d(a\sin(c+dx)+a)}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[c + d*x]/(a + a*Sin[c + d*x]),x]
```

```
[Out] -(ArcTanh[Cos[c + d*x]]/(a*d)) + Cos[c + d*x]/(d*(a + a*Sin[c + d*x]))
```

Rule 2648

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> -Simp[Cos[c +
 d*x]/(d*(b + a*Sin[c + d*x])), x] /; FreeQ[{a, b, c, d}, x] && EqQ[a^2 - b
^2, 0]
```

Rule 2747

```
Int[1/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (
f_.)*(x_)])), x_Symbol] :> Dist[b/(b*c - a*d), Int[1/(a + b*Sin[e + f*x]),
x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*Sin[e + f*x]), x], x] /; FreeQ[{a
, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\csc(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int \csc(c+dx)\,dx}{a} - \int \frac{1}{a+a\sin(c+dx)}\,dx$$
$$= -\frac{\tanh^{-1}(\cos(c+dx))}{ad} + \frac{\cos(c+dx)}{d(a+a\sin(c+dx))}$$

Mathematica [A] time = 0.07, size = 48, normalized size = 1.26

$$-\frac{\sec(c+dx)\left(\sin(c+dx)+\sqrt{\cos^2(c+dx)}\,\tanh^{-1}\left(\sqrt{\cos^2(c+dx)}\right)-1\right)}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[c + d*x]/(a + a*Sin[c + d*x]),x]
```

```
[Out] -((Sec[c + d*x]*(-1 + ArcTanh[Sqrt[Cos[c + d*x]^2]]*Sqrt[Cos[c + d*x]^2] +
Sin[c + d*x]))/(a*d))
```

fricas [B] time = 0.45, size = 97, normalized size = 2.55

$$-\frac{(\cos(dx+c)+\sin(dx+c)+1)\log\left(\frac{1}{2}\cos(dx+c)+\frac{1}{2}\right)-(\cos(dx+c)+\sin(dx+c)+1)\log\left(-\frac{1}{2}\cos(dx+\right.}{2\,(ad\cos(dx+c)+ad\sin(dx+c)+ad)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*((cos(d*x + c) + sin(d*x + c) + 1)*log(1/2*cos(d*x + c) + 1/2) - (cos(
d*x + c) + sin(d*x + c) + 1)*log(-1/2*cos(d*x + c) + 1/2) - 2*cos(d*x + c)
+ 2*sin(d*x + c) - 2)/(a*d*cos(d*x + c) + a*d*sin(d*x + c) + a*d)
```

giac [A] time = 1.47, size = 38, normalized size = 1.00

$$\frac{\frac{\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right|\right)}{a}+\frac{2}{a\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+1\right)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] (log(abs(tan(1/2*d*x + 1/2*c)))/a + 2/(a*(tan(1/2*d*x + 1/2*c) + 1)))/d
```

maple [A] time = 0.09, size = 40, normalized size = 1.05

$$\frac{\ln\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{ad}+\frac{2}{ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] 1/a/d*ln(tan(1/2*d*x+1/2*c))+2/a/d/(tan(1/2*d*x+1/2*c)+1)
```

maxima [A] time = 0.63, size = 51, normalized size = 1.34

$$\frac{\frac{\log\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{a}+\frac{2}{a+\frac{a\sin(dx+c)}{\cos(dx+c)+1}}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] (log(sin(d*x + c)/(cos(d*x + c) + 1))/a + 2/(a + a*sin(d*x + c)/(cos(d*x +
c) + 1)))/d
```

mupad [B] time = 1.21, size = 39, normalized size = 1.03

$$\frac{\ln\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right)}{a\,d}+\frac{2}{a\,d\,\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(c + d*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] log(tan(c/2 + (d*x)/2))/(a*d) + 2/(a*d*(tan(c/2 + (d*x)/2) + 1))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\csc{\left(c+dx \right)}}{\sin{\left(c+dx \right)}+1}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)/(sin(c + d*x) + 1), x)/a
```

3.201 $\int \frac{\csc(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=29

$$\mathrm{Int}\left(\frac{\csc(c+dx)}{(e+fx)(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(csc(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Csc[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\csc(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx=\int \frac{\csc(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 11.97, size = 0, normalized size = 0.00

$$\int \frac{\csc(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Csc[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\csc\left(dx+c\right)}{afx+ae+\left(afx+ae\right)\sin\left(dx+c\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral(csc(d*x + c)/(a*f*x + a*e + (a*f*x + a*e)*sin(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\csc(dx+c)}{(fx+e)(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] integrate(csc(d*x + c)/((f*x + e)*(a*sin(d*x + c) + a)), x)
```

maple [A] time = 5.11, size = 0, normalized size = 0.00

$$\int \frac{\csc(dx+c)}{(fx+e)(a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
[Out] int(csc(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sin(c+d\,x)\,\left(e+f\,x\right)\,\left(a+a\,\sin(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(c + d*x)*(e + f*x)*(a + a*sin(c + d*x))),x)
[Out] int(1/(sin(c + d*x)*(e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\csc (c+dx)}{e \sin (c+dx)+e+fx \sin (c+dx)+fx}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)/(e*sin(c + d*x) + e + f*x*sin(c + d*x) + f*x), x)/a
```

3.202 $\int \frac{\csc(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\csc(c+dx)}{(e+fx)^2(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(csc(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
[Out] Defer[Int][Csc[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\csc(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx = \int \frac{\csc(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 13.54, size = 0, normalized size = 0.00

$$\int \frac{\csc(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
[Out] Integrate[Csc[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\csc(dx+c)}{af^2x^2+2\,aefx+ae^2+\left(af^2x^2+2\,aefx+ae^2\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(csc(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")

[Out] integral(csc(d*x + c)/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2 + 2*a*e*f*x + a*e^2)*sin(d*x + c)), x)

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(csc(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")

[Out] Timed out

maple [A] time = 10.40, size = 0, normalized size = 0.00

$$\int \frac{\csc \left(dx+c\right)}{\left(fx+e\right)^{2} \left(a+a\sin \left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(csc(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)

[Out] int(csc(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(csc(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")

[Out] Timed out

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sin \left(c+d\,x\right)\,{\left(e+f\,x\right)}^2\,\left(a+a\,\sin \left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(sin(c + d*x)*(e + f*x)^2*(a + a*sin(c + d*x))),x)

[Out] int(1/(sin(c + d*x)*(e + f*x)^2*(a + a*sin(c + d*x))), x)

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\csc(c+dx)}{e^2\sin(c+dx)+e^2+2efx\sin(c+dx)+2efx+f^2x^2\sin(c+dx)+f^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)/(e**2*sin(c + d*x) + e**2 + 2*e*f*x*sin(c + d*x) + 2*
e*f*x + f**2*x**2*sin(c + d*x) + f**2*x**2), x)/a
```

3.203 $\int \frac{(e+fx)^3 \csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=463

$$\frac{12f^3\mathrm{Li}_3\left(ie^{i(c+dx)}\right)}{ad^4}+\frac{3f^3\mathrm{Li}_3\left(e^{2i(c+dx)}\right)}{2ad^4}+\frac{6if^3\mathrm{Li}_4\left(-e^{i(c+dx)}\right)}{ad^4}-\frac{6if^3\mathrm{Li}_4\left(e^{i(c+dx)}\right)}{ad^4}-\frac{12if^2(e+fx)\mathrm{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}-\frac{3if^2(}{}$$

```
[Out] -6*I*f^3*polylog(4,exp(I*(d*x+c)))/a/d^4+2*(f*x+e)^3*arctanh(exp(I*(d*x+c))
)/a/d-(f*x+e)^3*cot(1/2*c+1/4*Pi+1/2*d*x)/a/d-(f*x+e)^3*cot(d*x+c)/a/d+6*f*
(f*x+e)^2*ln(1-I*exp(I*(d*x+c)))/a/d^2+3*f*(f*x+e)^2*ln(1-exp(2*I*(d*x+c)))
/a/d^2-3*I*f^2*(f*x+e)*polylog(2,exp(2*I*(d*x+c)))/a/d^3-12*I*f^2*(f*x+e)*p
olylog(2,I*exp(I*(d*x+c)))/a/d^3+6*I*f^3*polylog(4,-exp(I*(d*x+c)))/a/d^4-2
*I*(f*x+e)^3/a/d+6*f^2*(f*x+e)*polylog(3,-exp(I*(d*x+c)))/a/d^3+12*f^3*poly
log(3,I*exp(I*(d*x+c)))/a/d^4-6*f^2*(f*x+e)*polylog(3,exp(I*(d*x+c)))/a/d^3
+3/2*f^3*polylog(3,exp(2*I*(d*x+c)))/a/d^4+3*I*f*(f*x+e)^2*polylog(2,exp(I*
(d*x+c)))/a/d^2-3*I*f*(f*x+e)^2*polylog(2,-exp(I*(d*x+c)))/a/d^2
```

Rubi [A] time = 0.78, antiderivative size = 463, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4535, 4184, 3717, 2190, 2531, 2282, 6589, 4183, 6609, 3318}

$$-\frac{12if^2(e+fx)\mathrm{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}-\frac{3if^2(e+fx)\mathrm{PolyLog}\left(2,e^{2i(c+dx)}\right)}{ad^3}+\frac{6f^2(e+fx)\mathrm{PolyLog}\left(3,-e^{i(c+dx)}\right)}{ad^3}-\frac{6}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csc[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-2*I)*(e + f*x)^3)/(a*d) + (2*(e + f*x)^3*ArcTanh[E^(I*(c + d*x))])/(a*d)
 - ((e + f*x)^3*Cot[c/2 + Pi/4 + (d*x)/2])/(a*d) - ((e + f*x)^3*Cot[c + d*x
])/(a*d) + (6*f*(e + f*x)^2*Log[1 - I*E^(I*(c + d*x))])/(a*d^2) + (3*f*(e +
 f*x)^2*Log[1 - E^((2*I)*(c + d*x))])/(a*d^2) - ((3*I)*f*(e + f*x)^2*PolyLo
g[2, -E^(I*(c + d*x))])/(a*d^2) - ((12*I)*f^2*(e + f*x)*PolyLog[2, I*E^(I*(
c + d*x))])/(a*d^3) + ((3*I)*f*(e + f*x)^2*PolyLog[2, E^(I*(c + d*x))])/(a*
d^2) - ((3*I)*f^2*(e + f*x)*PolyLog[2, E^((2*I)*(c + d*x))])/(a*d^3) + (6*f
^2*(e + f*x)*PolyLog[3, -E^(I*(c + d*x))])/(a*d^3) + (12*f^3*PolyLog[3, I*E
^(I*(c + d*x))])/(a*d^4) - (6*f^2*(e + f*x)*PolyLog[3, E^(I*(c + d*x))])/(a
*d^3) + (3*f^3*PolyLog[3, E^((2*I)*(c + d*x))])/(2*a*d^4) + ((6*I)*f^3*Poly
Log[4, -E^(I*(c + d*x))])/(a*d^4) - ((6*I)*f^3*PolyLog[4, E^(I*(c + d*x))])
/(a*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\csc^2(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\csc^2(c+dx)\,dx}{a} - \int \frac{(e+fx)^3\csc(c+dx)}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{(e+fx)^3\cot(c+dx)}{ad} - \frac{\int (e+fx)^3\csc(c+dx)\,dx}{a} + \frac{(3f)\int (e+fx)^2\cot(c+dx)}{ad}$$

$$= -\frac{i(e+fx)^3}{ad} + \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^3\cot(c+dx)}{ad} + \frac{\int (e+fx)^3 \mathrm{cs}}{}$$

$$= -\frac{i(e+fx)^3}{ad} + \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+fx}{}$$

$$= -\frac{2i(e+fx)^3}{ad} + \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+f}{}$$

$$= -\frac{2i(e+fx)^3}{ad} + \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+f}{}$$

$$= -\frac{2i(e+fx)^3}{ad} + \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+f}{}$$

$$= -\frac{2i(e+fx)^3}{ad} + \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+f}{}$$

$$= -\frac{2i(e+fx)^3}{ad} + \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^3\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+f}{}$$

Mathematica [B] time = 11.22, size = 1013, normalized size = 2.19

$$\frac{-d^3x^3\log\left(1-e^{-i(c+dx)}\right)f^3 + d^3x^3\log\left(1+e^{-i(c+dx)}\right)f^3 + 3\left(id^2\mathrm{Li}_2\left(-e^{-i(c+dx)}\right)x^2 + 2d\mathrm{Li}_3\left(-e^{-i(c+dx)}\right)x - 2i\mathrm{Li}_4\left(-\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csc[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (((-2*I)*d^3*(e + f*x)^3)/(-1 + E^((2*I)*c)) - 3*d^2*e*(d*e - 2*f)*f*x*Log[
1 - E^((-I)*(c + d*x))] - 3*d^2*(d*e - f)*f^2*x^2*Log[1 - E^((-I)*(c + d*x)
)] - d^3*f^3*x^3*Log[1 - E^((-I)*(c + d*x))] + 3*d^2*e*f*(d*e + 2*f)*x*Log[
```

```
1 + E^((-I)*(c + d*x))] + 3*d^2*f^2*(d*e + f)*x^2*Log[1 + E^((-I)*(c + d*x)
)] + d^3*f^3*x^3*Log[1 + E^((-I)*(c + d*x))] + I*d^2*e^2*(d*e - 3*f)*(d*x +
 I*Log[1 - E^(I*(c + d*x))]) + d^2*e^2*(d*e + 3*f)*((-I)*d*x + Log[1 + E^(I
*(c + d*x))]) + (3*I)*d*e*f*(d*e + 2*f)*PolyLog[2, -E^((-I)*(c + d*x))] - (
3*I)*d*e*(d*e - 2*f)*f*PolyLog[2, E^((-I)*(c + d*x))] + 6*f^2*(d*e + f)*(I*
d*x*PolyLog[2, -E^((-I)*(c + d*x))] + PolyLog[3, -E^((-I)*(c + d*x))]) - (6
*I)*(d*e - f)*f^2*(d*x*PolyLog[2, E^((-I)*(c + d*x))] - I*PolyLog[3, E^((-I
)*(c + d*x))]) + 3*f^3*(I*d^2*x^2*PolyLog[2, -E^((-I)*(c + d*x))] + 2*d*x*P
olyLog[3, -E^((-I)*(c + d*x))] - (2*I)*PolyLog[4, -E^((-I)*(c + d*x))]) - (
3*I)*f^3*(d^2*x^2*PolyLog[2, E^((-I)*(c + d*x))] - (2*I)*d*x*PolyLog[3, E^(
(-I)*(c + d*x))] - 2*PolyLog[4, E^((-I)*(c + d*x))]))/(a*d^4) - (6*f*(Cos[c
] + I*Sin[c])*(((e + f*x)^3*(Cos[c] - I*Sin[c]))/(3*f) - ((e + f*x)^2*Log[1
 + I*Cos[c + d*x] + Sin[c + d*x]]*(1 + I*Cos[c] + Sin[c]))/d + (2*f*(d*(e +
 f*x)*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*x]] - I*f*PolyLog[3, (-I)*Co
s[c + d*x] - Sin[c + d*x]])*(Cos[c] - I*(1 + Sin[c])))/d^3))/(a*d*(Cos[c] +
 I*(1 + Sin[c]))) + (Csc[c/2]*Csc[c/2 + (d*x)/2]*(e^3*Sin[(d*x)/2] + 3*e^2*
f*x*Sin[(d*x)/2] + 3*e*f^2*x^2*Sin[(d*x)/2] + f^3*x^3*Sin[(d*x)/2]))/(2*a*d
) + (Sec[c/2]*Sec[c/2 + (d*x)/2]*(e^3*Sin[(d*x)/2] + 3*e^2*f*x*Sin[(d*x)/2]
 + 3*e*f^2*x^2*Sin[(d*x)/2] + f^3*x^3*Sin[(d*x)/2]))/(2*a*d) + (2*(e^3*Sin[
(d*x)/2] + 3*e^2*f*x*Sin[(d*x)/2] + 3*e*f^2*x^2*Sin[(d*x)/2] + f^3*x^3*Sin[
(d*x)/2]))/(a*d*(Cos[c/2] + Sin[c/2])*(Cos[c/2 + (d*x)/2] + Sin[c/2 + (d*x)
/2]))
```

fricas [C] time = 0.71, size = 4789, normalized size = 10.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*d^3*f^3*x^3 + 6*d^3*e*f^2*x^2 + 6*d^3*e^2*f*x + 2*d^3*e^3 - 4*(d^3*
f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*cos(d*x + c)^2 - 2*(d^
3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*cos(d*x + c) + (3*I*
d^2*f^3*x^2 + 3*I*d^2*e^2*f - 6*I*d*e*f^2 + (-3*I*d^2*f^3*x^2 - 3*I*d^2*e^2
*f + 6*I*d*e*f^2 - 6*I*(d^2*e*f^2 - d*f^3)*x)*cos(d*x + c)^2 + 6*I*(d^2*e*f
^2 - d*f^3)*x + (3*I*d^2*f^3*x^2 + 3*I*d^2*e^2*f - 6*I*d*e*f^2 + 6*I*(d^2*e
*f^2 - d*f^3)*x + (3*I*d^2*f^3*x^2 + 3*I*d^2*e^2*f - 6*I*d*e*f^2 + 6*I*(d^2
*e*f^2 - d*f^3)*x)*cos(d*x + c))*sin(d*x + c))*dilog(cos(d*x + c) + I*sin(d
*x + c)) + (-3*I*d^2*f^3*x^2 - 3*I*d^2*e^2*f + 6*I*d*e*f^2 + (3*I*d^2*f^3*x
^2 + 3*I*d^2*e^2*f - 6*I*d*e*f^2 + 6*I*(d^2*e*f^2 - d*f^3)*x)*cos(d*x + c)^
2 - 6*I*(d^2*e*f^2 - d*f^3)*x + (-3*I*d^2*f^3*x^2 - 3*I*d^2*e^2*f + 6*I*d*e
*f^2 - 6*I*(d^2*e*f^2 - d*f^3)*x + (-3*I*d^2*f^3*x^2 - 3*I*d^2*e^2*f + 6*I*
d*e*f^2 - 6*I*(d^2*e*f^2 - d*f^3)*x)*cos(d*x + c))*sin(d*x + c))*dilog(cos(
d*x + c) - I*sin(d*x + c)) + (-12*I*d*f^3*x - 12*I*d*e*f^2 + (12*I*d*f^3*x
+ 12*I*d*e*f^2)*cos(d*x + c)^2 + (-12*I*d*f^3*x - 12*I*d*e*f^2 + (-12*I*d*f
```

^3*x - 12*I*d*e*f^2)*cos(d*x + c))*sin(d*x + c))*dilog(I*cos(d*x + c) - sin
(d*x + c)) + (12*I*d*f^3*x + 12*I*d*e*f^2 + (-12*I*d*f^3*x - 12*I*d*e*f^2)*
cos(d*x + c)^2 + (12*I*d*f^3*x + 12*I*d*e*f^2 + (12*I*d*f^3*x + 12*I*d*e*f^
2)*cos(d*x + c))*sin(d*x + c))*dilog(-I*cos(d*x + c) - sin(d*x + c)) + (3*I
*d^2*f^3*x^2 + 3*I*d^2*e^2*f + 6*I*d*e*f^2 + (-3*I*d^2*f^3*x^2 - 3*I*d^2*e^
2*f - 6*I*d*e*f^2 - 6*I*(d^2*e*f^2 + d*f^3)*x)*cos(d*x + c)^2 + 6*I*(d^2*e*
f^2 + d*f^3)*x + (3*I*d^2*f^3*x^2 + 3*I*d^2*e^2*f + 6*I*d*e*f^2 + 6*I*(d^2*
e*f^2 + d*f^3)*x + (3*I*d^2*f^3*x^2 + 3*I*d^2*e^2*f + 6*I*d*e*f^2 + 6*I*(d^
2*e*f^2 + d*f^3)*x)*cos(d*x + c))*sin(d*x + c))*dilog(-cos(d*x + c) + I*sin
(d*x + c)) + (-3*I*d^2*f^3*x^2 - 3*I*d^2*e^2*f - 6*I*d*e*f^2 + (3*I*d^2*f^3
*x^2 + 3*I*d^2*e^2*f + 6*I*d*e*f^2 + 6*I*(d^2*e*f^2 + d*f^3)*x)*cos(d*x + c
)^2 - 6*I*(d^2*e*f^2 + d*f^3)*x + (-3*I*d^2*f^3*x^2 - 3*I*d^2*e^2*f - 6*I*d
*e*f^2 - 6*I*(d^2*e*f^2 + d*f^3)*x + (-3*I*d^2*f^3*x^2 - 3*I*d^2*e^2*f - 6*
I*d*e*f^2 - 6*I*(d^2*e*f^2 + d*f^3)*x)*cos(d*x + c))*sin(d*x + c))*dilog(-c
os(d*x + c) - I*sin(d*x + c)) + (d^3*f^3*x^3 + d^3*e^3 + 3*d^2*e^2*f + 3*(d
^3*e*f^2 + d^2*f^3)*x^2 - (d^3*f^3*x^3 + d^3*e^3 + 3*d^2*e^2*f + 3*(d^3*e*f
^2 + d^2*f^3)*x^2 + 3*(d^3*e^2*f + 2*d^2*e*f^2)*x)*cos(d*x + c)^2 + 3*(d^3*
e^2*f + 2*d^2*e*f^2)*x + (d^3*f^3*x^3 + d^3*e^3 + 3*d^2*e^2*f + 3*(d^3*e*f^
2 + d^2*f^3)*x^2 + 3*(d^3*e^2*f + 2*d^2*e*f^2)*x + (d^3*f^3*x^3 + d^3*e^3 +
 3*d^2*e^2*f + 3*(d^3*e*f^2 + d^2*f^3)*x^2 + 3*(d^3*e^2*f + 2*d^2*e*f^2)*x)
*cos(d*x + c))*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c) + 1) + 6*(d^
2*e^2*f - 2*c*d*e*f^2 + c^2*f^3 - (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d
*x + c)^2 + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3 + (d^2*e^2*f - 2*c*d*e*f^2 +
 c^2*f^3)*cos(d*x + c))*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c) + I
) + (d^3*f^3*x^3 + d^3*e^3 + 3*d^2*e^2*f + 3*(d^3*e*f^2 + d^2*f^3)*x^2 - (d
^3*f^3*x^3 + d^3*e^3 + 3*d^2*e^2*f + 3*(d^3*e*f^2 + d^2*f^3)*x^2 + 3*(d^3*e
^2*f + 2*d^2*e*f^2)*x)*cos(d*x + c)^2 + 3*(d^3*e^2*f + 2*d^2*e*f^2)*x + (d^
3*f^3*x^3 + d^3*e^3 + 3*d^2*e^2*f + 3*(d^3*e*f^2 + d^2*f^3)*x^2 + 3*(d^3*e^
2*f + 2*d^2*e*f^2)*x + (d^3*f^3*x^3 + d^3*e^3 + 3*d^2*e^2*f + 3*(d^3*e*f^2
+ d^2*f^3)*x^2 + 3*(d^3*e^2*f + 2*d^2*e*f^2)*x)*cos(d*x + c))*sin(d*x + c))
*log(cos(d*x + c) - I*sin(d*x + c) + 1) + 6*(d^2*f^3*x^2 + 2*d^2*e*f^2*x +
2*c*d*e*f^2 - c^2*f^3 - (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^
3)*cos(d*x + c)^2 + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3 +
(d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c))*sin(d*x
 + c))*log(I*cos(d*x + c) + sin(d*x + c) + 1) + 6*(d^2*f^3*x^2 + 2*d^2*e*f^
2*x + 2*c*d*e*f^2 - c^2*f^3 - (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 -
c^2*f^3)*cos(d*x + c)^2 + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*
f^3 + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c))*s
in(d*x + c))*log(-I*cos(d*x + c) + sin(d*x + c) + 1) - (d^3*e^3 - 3*(c + 1)
*d^2*e^2*f + 3*(c^2 + 2*c)*d*e*f^2 - (c^3 + 3*c^2)*f^3 - (d^3*e^3 - 3*(c +
1)*d^2*e^2*f + 3*(c^2 + 2*c)*d*e*f^2 - (c^3 + 3*c^2)*f^3)*cos(d*x + c)^2 +
(d^3*e^3 - 3*(c + 1)*d^2*e^2*f + 3*(c^2 + 2*c)*d*e*f^2 - (c^3 + 3*c^2)*f^3
+ (d^3*e^3 - 3*(c + 1)*d^2*e^2*f + 3*(c^2 + 2*c)*d*e*f^2 - (c^3 + 3*c^2)*f^
3)*cos(d*x + c))*sin(d*x + c))*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) +
 1/2) - (d^3*e^3 - 3*(c + 1)*d^2*e^2*f + 3*(c^2 + 2*c)*d*e*f^2 - (c^3 + 3*c

```
^2)*f^3 - (d^3*e^3 - 3*(c + 1)*d^2*e^2*f + 3*(c^2 + 2*c)*d*e*f^2 - (c^3 + 3
*c^2)*f^3)*cos(d*x + c)^2 + (d^3*e^3 - 3*(c + 1)*d^2*e^2*f + 3*(c^2 + 2*c)*
d*e*f^2 - (c^3 + 3*c^2)*f^3 + (d^3*e^3 - 3*(c + 1)*d^2*e^2*f + 3*(c^2 + 2*c
)*d*e*f^2 - (c^3 + 3*c^2)*f^3)*cos(d*x + c))*sin(d*x + c))*log(-1/2*cos(d*x
 + c) - 1/2*I*sin(d*x + c) + 1/2) - (d^3*f^3*x^3 + 3*c*d^2*e^2*f - 3*(c^2 +
 2*c)*d*e*f^2 + (c^3 + 3*c^2)*f^3 + 3*(d^3*e*f^2 - d^2*f^3)*x^2 - (d^3*f^3*
x^3 + 3*c*d^2*e^2*f - 3*(c^2 + 2*c)*d*e*f^2 + (c^3 + 3*c^2)*f^3 + 3*(d^3*e*
f^2 - d^2*f^3)*x^2 + 3*(d^3*e^2*f - 2*d^2*e*f^2)*x)*cos(d*x + c)^2 + 3*(d^3
*e^2*f - 2*d^2*e*f^2)*x + (d^3*f^3*x^3 + 3*c*d^2*e^2*f - 3*(c^2 + 2*c)*d*e*
f^2 + (c^3 + 3*c^2)*f^3 + 3*(d^3*e*f^2 - d^2*f^3)*x^2 + 3*(d^3*e^2*f - 2*d^
2*e*f^2)*x + (d^3*f^3*x^3 + 3*c*d^2*e^2*f - 3*(c^2 + 2*c)*d*e*f^2 + (c^3 +
3*c^2)*f^3 + 3*(d^3*e*f^2 - d^2*f^3)*x^2 + 3*(d^3*e^2*f - 2*d^2*e*f^2)*x)*c
os(d*x + c))*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + 1) + 6*(d^2
*e^2*f - 2*c*d*e*f^2 + c^2*f^3 - (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*
x + c)^2 + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3 + (d^2*e^2*f - 2*c*d*e*f^2 +
c^2*f^3)*cos(d*x + c))*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + I
) - (d^3*f^3*x^3 + 3*c*d^2*e^2*f - 3*(c^2 + 2*c)*d*e*f^2 + (c^3 + 3*c^2)*f^
3 + 3*(d^3*e*f^2 - d^2*f^3)*x^2 - (d^3*f^3*x^3 + 3*c*d^2*e^2*f - 3*(c^2 + 2
*c)*d*e*f^2 + (c^3 + 3*c^2)*f^3 + 3*(d^3*e*f^2 - d^2*f^3)*x^2 + 3*(d^3*e^2*
f - 2*d^2*e*f^2)*x)*cos(d*x + c)^2 + 3*(d^3*e^2*f - 2*d^2*e*f^2)*x + (d^3*f
^3*x^3 + 3*c*d^2*e^2*f - 3*(c^2 + 2*c)*d*e*f^2 + (c^3 + 3*c^2)*f^3 + 3*(d^3
*e*f^2 - d^2*f^3)*x^2 + 3*(d^3*e^2*f - 2*d^2*e*f^2)*x + (d^3*f^3*x^3 + 3*c*
d^2*e^2*f - 3*(c^2 + 2*c)*d*e*f^2 + (c^3 + 3*c^2)*f^3 + 3*(d^3*e*f^2 - d^2*
f^3)*x^2 + 3*(d^3*e^2*f - 2*d^2*e*f^2)*x)*cos(d*x + c))*sin(d*x + c))*log(-
cos(d*x + c) - I*sin(d*x + c) + 1) + (6*I*f^3*cos(d*x + c)^2 - 6*I*f^3 + (-
6*I*f^3*cos(d*x + c) - 6*I*f^3)*sin(d*x + c))*polylog(4, cos(d*x + c) + I*s
in(d*x + c)) + (-6*I*f^3*cos(d*x + c)^2 + 6*I*f^3 + (6*I*f^3*cos(d*x + c) +
 6*I*f^3)*sin(d*x + c))*polylog(4, cos(d*x + c) - I*sin(d*x + c)) + (6*I*f^
3*cos(d*x + c)^2 - 6*I*f^3 + (-6*I*f^3*cos(d*x + c) - 6*I*f^3)*sin(d*x + c)
)*polylog(4, -cos(d*x + c) + I*sin(d*x + c)) + (-6*I*f^3*cos(d*x + c)^2 + 6
*I*f^3 + (6*I*f^3*cos(d*x + c) + 6*I*f^3)*sin(d*x + c))*polylog(4, -cos(d*x
 + c) - I*sin(d*x + c)) - 6*(d*f^3*x + d*e*f^2 - f^3 - (d*f^3*x + d*e*f^2 -
 f^3)*cos(d*x + c)^2 + (d*f^3*x + d*e*f^2 - f^3 + (d*f^3*x + d*e*f^2 - f^3)
*cos(d*x + c))*sin(d*x + c))*polylog(3, cos(d*x + c) + I*sin(d*x + c)) - 6*
(d*f^3*x + d*e*f^2 - f^3 - (d*f^3*x + d*e*f^2 - f^3)*cos(d*x + c)^2 + (d*f^
3*x + d*e*f^2 - f^3 + (d*f^3*x + d*e*f^2 - f^3)*cos(d*x + c))*sin(d*x + c))
*polylog(3, cos(d*x + c) - I*sin(d*x + c)) - 12*(f^3*cos(d*x + c)^2 - f^3 -
 (f^3*cos(d*x + c) + f^3)*sin(d*x + c))*polylog(3, I*cos(d*x + c) - sin(d*x
 + c)) - 12*(f^3*cos(d*x + c)^2 - f^3 - (f^3*cos(d*x + c) + f^3)*sin(d*x +
c))*polylog(3, -I*cos(d*x + c) - sin(d*x + c)) + 6*(d*f^3*x + d*e*f^2 + f^3
 - (d*f^3*x + d*e*f^2 + f^3)*cos(d*x + c)^2 + (d*f^3*x + d*e*f^2 + f^3 + (d
*f^3*x + d*e*f^2 + f^3)*cos(d*x + c))*sin(d*x + c))*polylog(3, -cos(d*x + c
) + I*sin(d*x + c)) + 6*(d*f^3*x + d*e*f^2 + f^3 - (d*f^3*x + d*e*f^2 + f^3
)*cos(d*x + c)^2 + (d*f^3*x + d*e*f^2 + f^3 + (d*f^3*x + d*e*f^2 + f^3)*cos
(d*x + c))*sin(d*x + c))*polylog(3, -cos(d*x + c) - I*sin(d*x + c)) - 2*(d^
```

```
3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3 + 2*(d^3*f^3*x^3 + 3*
d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*cos(d*x + c))*sin(d*x + c))/(a*d^4
*cos(d*x + c)^2 - a*d^4 - (a*d^4*cos(d*x + c) + a*d^4)*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.45, size = 1705, normalized size = 3.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csc(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] 12/a/d^2*f^2*e*ln(1-I*exp(I*(d*x+c)))*x+12/a/d^3*f^2*e*ln(1-I*exp(I*(d*x+c)
))*c+24/a/d^3*f^2*e*c*ln(exp(I*(d*x+c)))-6/a/d^3*e*f^2*c*ln(exp(I*(d*x+c))-
1)-6*I/a/d^2*e*f^2*polylog(2,-exp(I*(d*x+c)))*x+6*I/a/d^2*e*f^2*polylog(2,e
xp(I*(d*x+c)))*x-24*I/a/d^2*e*f^2*c*x-6*I/a/d^3*e*f^2*polylog(2,-exp(I*(d*x
+c)))-3*I/a/d^2*e^2*f*polylog(2,-exp(I*(d*x+c)))+3*I/a/d^2*e^2*f*polylog(2,
exp(I*(d*x+c)))-6*I/a/d^3*f^3*polylog(2,-exp(I*(d*x+c)))*x-6*I/a/d^3*f^3*po
lylog(2,exp(I*(d*x+c)))*x-12*I/a/d^3*e*f^2*c^2-3*I/a/d^2*f^3*polylog(2,-exp
(I*(d*x+c)))*x^2+3*I/a/d^2*f^3*polylog(2,exp(I*(d*x+c)))*x^2+3/a/d^2*f^3*ln
(exp(I*(d*x+c))+1)*x^2+3/a/d^2*f^3*ln(1-exp(I*(d*x+c)))*x^2-3/a/d^4*f^3*ln(
1-exp(I*(d*x+c)))*c^2+3/a/d^2*e^2*f*ln(exp(I*(d*x+c))+1)+3/a/d^2*e^2*f*ln(e
xp(I*(d*x+c))-1)+3/a/d^4*f^3*c^2*ln(exp(I*(d*x+c))-1)+8*I/a/d^4*f^3*c^3-4*I
/a/d*f^3*x^3-12/a/d^2*f*ln(exp(I*(d*x+c)))*e^2-12/a/d^4*f^3*c^2*ln(exp(I*(d
*x+c)))+6/a/d^4*f^3*c^2*ln(exp(I*(d*x+c))+I)+6/a/d^2*f*ln(exp(I*(d*x+c))+I)
*e^2-1/a/d*e^3*ln(exp(I*(d*x+c))-1)+1/a/d*e^3*ln(exp(I*(d*x+c))+1)-12*I/a/d
^3*f^3*polylog(2,I*exp(I*(d*x+c)))*x-12*I/a/d^3*e*f^2*polylog(2,I*exp(I*(d*
x+c)))+6/a/d^2*f^3*ln(1-I*exp(I*(d*x+c)))*x^2+6/a/d^2*e*f^2*ln(1-exp(I*(d*x
+c)))*x+6/a/d^3*e*f^2*ln(1-exp(I*(d*x+c)))*c+6/a/d^2*e*f^2*ln(exp(I*(d*x+c)
)+1)*x+12*I/a/d^3*f^3*c^2*x-12*I/a/d*e*f^2*x^2-6*I/a/d^3*e*f^2*polylog(2,ex
p(I*(d*x+c)))+6*f^3*polylog(3,-exp(I*(d*x+c)))/a/d^4+6*f^3*polylog(3,exp(I*
(d*x+c)))/a/d^4+12*f^3*polylog(3,I*exp(I*(d*x+c)))/a/d^4+6*I*f^3*polylog(4,
-exp(I*(d*x+c)))/a/d^4-6*I*f^3*polylog(4,exp(I*(d*x+c)))/a/d^4+1/a/d^4*f^3*
c^3*ln(exp(I*(d*x+c))-1)-6/a/d^3*e*f^2*polylog(3,exp(I*(d*x+c)))+6/a/d^3*e*
f^2*polylog(3,-exp(I*(d*x+c)))-6/a/d^3*f^3*polylog(3,exp(I*(d*x+c)))*x+6/a/
d^3*f^3*polylog(3,-exp(I*(d*x+c)))*x-6/a/d^4*f^3*ln(1-I*exp(I*(d*x+c)))*c^2
```

```
+1/a/d*f^3*ln(exp(I*(d*x+c))+1)*x^3-1/a/d*f^3*ln(1-exp(I*(d*x+c)))*x^3-1/a/
d^4*f^3*ln(1-exp(I*(d*x+c)))*c^3-3/a/d^3*e*f^2*c^2*ln(exp(I*(d*x+c))-1)-12/
a/d^3*f^2*e*c*ln(exp(I*(d*x+c))+I)-2*(-2*f^3*x^3+I*exp(I*(d*x+c))*f^3*x^3-6
*e*f^2*x^2+3*I*exp(I*(d*x+c))*e*f^2*x^2-6*e^2*f*x+3*I*exp(I*(d*x+c))*e^2*f*
x-2*e^3+I*exp(I*(d*x+c))*e^3+f^3*x^3*exp(2*I*(d*x+c))+3*e*f^2*x^2*exp(2*I*(
d*x+c))+3*e^2*f*x*exp(2*I*(d*x+c))+e^3*exp(2*I*(d*x+c)))/(exp(2*I*(d*x+c))-
1)/(exp(I*(d*x+c))+I)/d/a+3/a/d*e*f^2*ln(exp(I*(d*x+c))+1)*x^2-3/a/d*e*f^2*
ln(1-exp(I*(d*x+c)))*x^2-3/a/d*ln(1-exp(I*(d*x+c)))*e^2*f*x+3/a/d*ln(exp(I*
(d*x+c))+1)*e^2*f*x+3/a/d^3*e*f^2*c^2*ln(1-exp(I*(d*x+c)))-3/a/d^2*ln(1-exp
(I*(d*x+c)))*c*e^2*f+3/a/d^2*e^2*f*c*ln(exp(I*(d*x+c))-1)
```

maxima [B] time = 9.05, size = 7587, normalized size = 16.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(3*c*e^2*f*((5*sin(d*x + c)/(cos(d*x + c) + 1) + 1)/(a*d*sin(d*x + c)/(
cos(d*x + c) + 1) + a*d*sin(d*x + c)^2/(cos(d*x + c) + 1)^2) + 2*log(sin(d*
x + c)/(cos(d*x + c) + 1))/(a*d) - sin(d*x + c)/(a*d*(cos(d*x + c) + 1))) -
 e^3*((5*sin(d*x + c)/(cos(d*x + c) + 1) + 1)/(a*sin(d*x + c)/(cos(d*x + c)
 + 1) + a*sin(d*x + c)^2/(cos(d*x + c) + 1)^2) + 2*log(sin(d*x + c)/(cos(d*
x + c) + 1))/a - sin(d*x + c)/(a*(cos(d*x + c) + 1))) + 2*(-24*I*c^2*d*e*f^
2 + 8*I*c^3*f^3 + (-12*I*d^2*e^2*f + 24*I*c*d*e*f^2 - 12*I*c^2*f^3 + 12*(d^
2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(3*d*x + 3*c) + (12*I*d^2*e^2*f - 24*I*
c*d*e*f^2 + 12*I*c^2*f^3)*cos(2*d*x + 2*c) - 12*(d^2*e^2*f - 2*c*d*e*f^2 +
c^2*f^3)*cos(d*x + c) + (12*I*d^2*e^2*f - 24*I*c*d*e*f^2 + 12*I*c^2*f^3)*si
n(3*d*x + 3*c) - 12*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*sin(2*d*x + 2*c) +
(-12*I*d^2*e^2*f + 24*I*c*d*e*f^2 - 12*I*c^2*f^3)*sin(d*x + c))*arctan2(sin
(d*x + c) + 1, cos(d*x + c)) + (12*I*(d*x + c)^2*f^3 + (24*I*d*e*f^2 - 24*I
*c*f^3)*(d*x + c) - 12*((d*x + c)^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*co
s(3*d*x + 3*c) + (-12*I*(d*x + c)^2*f^3 + (-24*I*d*e*f^2 + 24*I*c*f^3)*(d*x
 + c))*cos(2*d*x + 2*c) + 12*((d*x + c)^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x +
c))*cos(d*x + c) + (-12*I*(d*x + c)^2*f^3 + (-24*I*d*e*f^2 + 24*I*c*f^3)*(d
*x + c))*sin(3*d*x + 3*c) + 12*((d*x + c)^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x
+ c))*sin(2*d*x + 2*c) + (12*I*(d*x + c)^2*f^3 + (24*I*d*e*f^2 - 24*I*c*f^3
)*(d*x + c))*sin(d*x + c))*arctan2(cos(d*x + c), sin(d*x + c) + 1) + (-2*I*
(d*x + c)^3*f^3 - 6*I*d^2*e^2*f + (-6*I*c^2 + 12*I*c)*d*e*f^2 + (2*I*c^3 -
6*I*c^2)*f^3 + (-6*I*d*e*f^2 + (6*I*c - 6*I)*f^3)*(d*x + c)^2 + (-6*I*d^2*e
^2*f + (12*I*c - 12*I)*d*e*f^2 + (-6*I*c^2 + 12*I*c)*f^3)*(d*x + c) + 2*((d
*x + c)^3*f^3 + 3*d^2*e^2*f + 3*(c^2 - 2*c)*d*e*f^2 - (c^3 - 3*c^2)*f^3 + 3
*(d*e*f^2 - (c - 1)*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c - 1)*d*e*f^2 + (
c^2 - 2*c)*f^3)*(d*x + c))*cos(3*d*x + 3*c) + (2*I*(d*x + c)^3*f^3 + 6*I*d^
2*e^2*f + (6*I*c^2 - 12*I*c)*d*e*f^2 + (-2*I*c^3 + 6*I*c^2)*f^3 + (6*I*d*e*
```

f^2 + (-6*I*c + 6*I)*f^3)*(d*x + c)^2 + (6*I*d^2*e^2*f + (-12*I*c + 12*I)*d
*e*f^2 + (6*I*c^2 - 12*I*c)*f^3)*(d*x + c))*cos(2*d*x + 2*c) - 2*((d*x + c)
^3*f^3 + 3*d^2*e^2*f + 3*(c^2 - 2*c)*d*e*f^2 - (c^3 - 3*c^2)*f^3 + 3*(d*e*f
^2 - (c - 1)*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c - 1)*d*e*f^2 + (c^2 - 2
*c)*f^3)*(d*x + c))*cos(d*x + c) + (2*I*(d*x + c)^3*f^3 + 6*I*d^2*e^2*f + (
6*I*c^2 - 12*I*c)*d*e*f^2 + (-2*I*c^3 + 6*I*c^2)*f^3 + (6*I*d*e*f^2 + (-6*I
*c + 6*I)*f^3)*(d*x + c)^2 + (6*I*d^2*e^2*f + (-12*I*c + 12*I)*d*e*f^2 + (6
*I*c^2 - 12*I*c)*f^3)*(d*x + c))*sin(3*d*x + 3*c) - 2*((d*x + c)^3*f^3 + 3*
d^2*e^2*f + 3*(c^2 - 2*c)*d*e*f^2 - (c^3 - 3*c^2)*f^3 + 3*(d*e*f^2 - (c - 1
)*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c - 1)*d*e*f^2 + (c^2 - 2*c)*f^3)*(d
*x + c))*sin(2*d*x + 2*c) + (-2*I*(d*x + c)^3*f^3 - 6*I*d^2*e^2*f + (-6*I*c
^2 + 12*I*c)*d*e*f^2 + (2*I*c^3 - 6*I*c^2)*f^3 + (-6*I*d*e*f^2 + (6*I*c - 6
*I)*f^3)*(d*x + c)^2 + (-6*I*d^2*e^2*f + (12*I*c - 12*I)*d*e*f^2 + (-6*I*c^
2 + 12*I*c)*f^3)*(d*x + c))*sin(d*x + c))*arctan2(sin(d*x + c), cos(d*x + c
) + 1) + (-6*I*d^2*e^2*f + (6*I*c^2 + 12*I*c)*d*e*f^2 + (-2*I*c^3 - 6*I*c^2
)*f^3 + 2*(3*d^2*e^2*f - 3*(c^2 + 2*c)*d*e*f^2 + (c^3 + 3*c^2)*f^3)*cos(3*d
*x + 3*c) + (6*I*d^2*e^2*f + (-6*I*c^2 - 12*I*c)*d*e*f^2 + (2*I*c^3 + 6*I*c
^2)*f^3)*cos(2*d*x + 2*c) - 2*(3*d^2*e^2*f - 3*(c^2 + 2*c)*d*e*f^2 + (c^3 +
 3*c^2)*f^3)*cos(d*x + c) + (6*I*d^2*e^2*f + (-6*I*c^2 - 12*I*c)*d*e*f^2 +
(2*I*c^3 + 6*I*c^2)*f^3)*sin(3*d*x + 3*c) - 2*(3*d^2*e^2*f - 3*(c^2 + 2*c)*
d*e*f^2 + (c^3 + 3*c^2)*f^3)*sin(2*d*x + 2*c) + (-6*I*d^2*e^2*f + (6*I*c^2
+ 12*I*c)*d*e*f^2 + (-2*I*c^3 - 6*I*c^2)*f^3)*sin(d*x + c))*arctan2(sin(d*x
 + c), cos(d*x + c) - 1) + (-2*I*(d*x + c)^3*f^3 + (-6*I*d*e*f^2 + (6*I*c +
 6*I)*f^3)*(d*x + c)^2 + (-6*I*d^2*e^2*f + (12*I*c + 12*I)*d*e*f^2 + (-6*I*
c^2 - 12*I*c)*f^3)*(d*x + c) + 2*((d*x + c)^3*f^3 + 3*(d*e*f^2 - (c + 1)*f^
3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c + 1)*d*e*f^2 + (c^2 + 2*c)*f^3)*(d*x +
 c))*cos(3*d*x + 3*c) + (2*I*(d*x + c)^3*f^3 + (6*I*d*e*f^2 + (-6*I*c - 6*I
)*f^3)*(d*x + c)^2 + (6*I*d^2*e^2*f + (-12*I*c - 12*I)*d*e*f^2 + (6*I*c^2 +
 12*I*c)*f^3)*(d*x + c))*cos(2*d*x + 2*c) - 2*((d*x + c)^3*f^3 + 3*(d*e*f^2
 - (c + 1)*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c + 1)*d*e*f^2 + (c^2 + 2*c
)*f^3)*(d*x + c))*cos(d*x + c) + (2*I*(d*x + c)^3*f^3 + (6*I*d*e*f^2 + (-6*
I*c - 6*I)*f^3)*(d*x + c)^2 + (6*I*d^2*e^2*f + (-12*I*c - 12*I)*d*e*f^2 + (
6*I*c^2 + 12*I*c)*f^3)*(d*x + c))*sin(3*d*x + 3*c) - 2*((d*x + c)^3*f^3 + 3
*(d*e*f^2 - (c + 1)*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c + 1)*d*e*f^2 + (
c^2 + 2*c)*f^3)*(d*x + c))*sin(2*d*x + 2*c) + (-2*I*(d*x + c)^3*f^3 + (-6*I
*d*e*f^2 + (6*I*c + 6*I)*f^3)*(d*x + c)^2 + (-6*I*d^2*e^2*f + (12*I*c + 12*
I)*d*e*f^2 + (-6*I*c^2 - 12*I*c)*f^3)*(d*x + c))*sin(d*x + c))*arctan2(sin(
d*x + c), -cos(d*x + c) + 1) - 8*((d*x + c)^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*
x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*(d*x + c))*cos(3*d*x + 3*c
) + (12*I*c^2*d*e*f^2 - 4*I*(d*x + c)^3*f^3 - 4*I*c^3*f^3 + (-12*I*d*e*f^2
+ 12*I*c*f^3)*(d*x + c)^2 + (-12*I*d^2*e^2*f + 24*I*c*d*e*f^2 - 12*I*c^2*f^
3)*(d*x + c))*cos(2*d*x + 2*c) - 4*(3*c^2*d*e*f^2 - (d*x + c)^3*f^3 - c^3*f
^3 - 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 - 3*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3
)*(d*x + c))*cos(d*x + c) + (24*I*d*e*f^2 + 24*I*(d*x + c)*f^3 - 24*I*c*f^3
 - 24*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(3*d*x + 3*c) + (-24*I*d*e*f^2 -

```
 24*I*(d*x + c)*f^3 + 24*I*c*f^3)*cos(2*d*x + 2*c) + 24*(d*e*f^2 + (d*x + c
)*f^3 - c*f^3)*cos(d*x + c) + (-24*I*d*e*f^2 - 24*I*(d*x + c)*f^3 + 24*I*c*
f^3)*sin(3*d*x + 3*c) + 24*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(2*d*x + 2*
c) + (24*I*d*e*f^2 + 24*I*(d*x + c)*f^3 - 24*I*c*f^3)*sin(d*x + c))*dilog(I
*e^(I*d*x + I*c)) + (6*I*d^2*e^2*f + (-12*I*c + 12*I)*d*e*f^2 + 6*I*(d*x +
c)^2*f^3 + (6*I*c^2 - 12*I*c)*f^3 + (12*I*d*e*f^2 + (-12*I*c + 12*I)*f^3)*(
d*x + c) - 6*(d^2*e^2*f - 2*(c - 1)*d*e*f^2 + (d*x + c)^2*f^3 + (c^2 - 2*c)
*f^3 + 2*(d*e*f^2 - (c - 1)*f^3)*(d*x + c))*cos(3*d*x + 3*c) + (-6*I*d^2*e^
2*f + (12*I*c - 12*I)*d*e*f^2 - 6*I*(d*x + c)^2*f^3 + (-6*I*c^2 + 12*I*c)*f
^3 + (-12*I*d*e*f^2 + (12*I*c - 12*I)*f^3)*(d*x + c))*cos(2*d*x + 2*c) + 6*
(d^2*e^2*f - 2*(c - 1)*d*e*f^2 + (d*x + c)^2*f^3 + (c^2 - 2*c)*f^3 + 2*(d*e
*f^2 - (c - 1)*f^3)*(d*x + c))*cos(d*x + c) + (-6*I*d^2*e^2*f + (12*I*c - 1
2*I)*d*e*f^2 - 6*I*(d*x + c)^2*f^3 + (-6*I*c^2 + 12*I*c)*f^3 + (-12*I*d*e*f
^2 + (12*I*c - 12*I)*f^3)*(d*x + c))*sin(3*d*x + 3*c) + 6*(d^2*e^2*f - 2*(c
 - 1)*d*e*f^2 + (d*x + c)^2*f^3 + (c^2 - 2*c)*f^3 + 2*(d*e*f^2 - (c - 1)*f^
3)*(d*x + c))*sin(2*d*x + 2*c) + (6*I*d^2*e^2*f + (-12*I*c + 12*I)*d*e*f^2
+ 6*I*(d*x + c)^2*f^3 + (6*I*c^2 - 12*I*c)*f^3 + (12*I*d*e*f^2 + (-12*I*c +
 12*I)*f^3)*(d*x + c))*sin(d*x + c))*dilog(-e^(I*d*x + I*c)) + (-6*I*d^2*e^
2*f + (12*I*c + 12*I)*d*e*f^2 - 6*I*(d*x + c)^2*f^3 + (-6*I*c^2 - 12*I*c)*f
^3 + (-12*I*d*e*f^2 + (12*I*c + 12*I)*f^3)*(d*x + c) + 6*(d^2*e^2*f - 2*(c
+ 1)*d*e*f^2 + (d*x + c)^2*f^3 + (c^2 + 2*c)*f^3 + 2*(d*e*f^2 - (c + 1)*f^3
)*(d*x + c))*cos(3*d*x + 3*c) + (6*I*d^2*e^2*f + (-12*I*c - 12*I)*d*e*f^2 +
 6*I*(d*x + c)^2*f^3 + (6*I*c^2 + 12*I*c)*f^3 + (12*I*d*e*f^2 + (-12*I*c -
12*I)*f^3)*(d*x + c))*cos(2*d*x + 2*c) - 6*(d^2*e^2*f - 2*(c + 1)*d*e*f^2 +
 (d*x + c)^2*f^3 + (c^2 + 2*c)*f^3 + 2*(d*e*f^2 - (c + 1)*f^3)*(d*x + c))*c
os(d*x + c) + (6*I*d^2*e^2*f + (-12*I*c - 12*I)*d*e*f^2 + 6*I*(d*x + c)^2*f
^3 + (6*I*c^2 + 12*I*c)*f^3 + (12*I*d*e*f^2 + (-12*I*c - 12*I)*f^3)*(d*x +
c))*sin(3*d*x + 3*c) - 6*(d^2*e^2*f - 2*(c + 1)*d*e*f^2 + (d*x + c)^2*f^3 +
 (c^2 + 2*c)*f^3 + 2*(d*e*f^2 - (c + 1)*f^3)*(d*x + c))*sin(2*d*x + 2*c) +
(-6*I*d^2*e^2*f + (12*I*c + 12*I)*d*e*f^2 - 6*I*(d*x + c)^2*f^3 + (-6*I*c^2
 - 12*I*c)*f^3 + (-12*I*d*e*f^2 + (12*I*c + 12*I)*f^3)*(d*x + c))*sin(d*x +
 c))*dilog(e^(I*d*x + I*c)) - ((d*x + c)^3*f^3 + 3*d^2*e^2*f + 3*(c^2 - 2*c
)*d*e*f^2 - (c^3 - 3*c^2)*f^3 + 3*(d*e*f^2 - (c - 1)*f^3)*(d*x + c)^2 + 3*(
d^2*e^2*f - 2*(c - 1)*d*e*f^2 + (c^2 - 2*c)*f^3)*(d*x + c) - (-I*(d*x + c)^
3*f^3 - 3*I*d^2*e^2*f + (-3*I*c^2 + 6*I*c)*d*e*f^2 + (I*c^3 - 3*I*c^2)*f^3
+ (-3*I*d*e*f^2 + (3*I*c - 3*I)*f^3)*(d*x + c)^2 + (-3*I*d^2*e^2*f + (6*I*c
 - 6*I)*d*e*f^2 + (-3*I*c^2 + 6*I*c)*f^3)*(d*x + c))*cos(3*d*x + 3*c) - ((d
*x + c)^3*f^3 + 3*d^2*e^2*f + 3*(c^2 - 2*c)*d*e*f^2 - (c^3 - 3*c^2)*f^3 + 3
*(d*e*f^2 - (c - 1)*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c - 1)*d*e*f^2 + (
c^2 - 2*c)*f^3)*(d*x + c))*cos(2*d*x + 2*c) - (I*(d*x + c)^3*f^3 + 3*I*d^2*
e^2*f + (3*I*c^2 - 6*I*c)*d*e*f^2 + (-I*c^3 + 3*I*c^2)*f^3 + (3*I*d*e*f^2 +
 (-3*I*c + 3*I)*f^3)*(d*x + c)^2 + (3*I*d^2*e^2*f + (-6*I*c + 6*I)*d*e*f^2
+ (3*I*c^2 - 6*I*c)*f^3)*(d*x + c))*cos(d*x + c) - ((d*x + c)^3*f^3 + 3*d^2
*e^2*f + 3*(c^2 - 2*c)*d*e*f^2 - (c^3 - 3*c^2)*f^3 + 3*(d*e*f^2 - (c - 1)*f
^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c - 1)*d*e*f^2 + (c^2 - 2*c)*f^3)*(d*x
```

```
+ c))*sin(3*d*x + 3*c) - (I*(d*x + c)^3*f^3 + 3*I*d^2*e^2*f + (3*I*c^2 - 6*
I*c)*d*e*f^2 + (-I*c^3 + 3*I*c^2)*f^3 + (3*I*d*e*f^2 + (-3*I*c + 3*I)*f^3)*
(d*x + c)^2 + (3*I*d^2*e^2*f + (-6*I*c + 6*I)*d*e*f^2 + (3*I*c^2 - 6*I*c)*f
^3)*(d*x + c))*sin(2*d*x + 2*c) + ((d*x + c)^3*f^3 + 3*d^2*e^2*f + 3*(c^2 -
 2*c)*d*e*f^2 - (c^3 - 3*c^2)*f^3 + 3*(d*e*f^2 - (c - 1)*f^3)*(d*x + c)^2 +
 3*(d^2*e^2*f - 2*(c - 1)*d*e*f^2 + (c^2 - 2*c)*f^3)*(d*x + c))*sin(d*x + c
))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*cos(d*x + c) + 1) + ((d*x + c)^3
*f^3 - 3*d^2*e^2*f + 3*(c^2 + 2*c)*d*e*f^2 - (c^3 + 3*c^2)*f^3 + 3*(d*e*f^2
 - (c + 1)*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c + 1)*d*e*f^2 + (c^2 + 2*c
)*f^3)*(d*x + c) + (I*(d*x + c)^3*f^3 - 3*I*d^2*e^2*f + (3*I*c^2 + 6*I*c)*d
*e*f^2 + (-I*c^3 - 3*I*c^2)*f^3 + (3*I*d*e*f^2 + (-3*I*c - 3*I)*f^3)*(d*x +
 c)^2 + (3*I*d^2*e^2*f + (-6*I*c - 6*I)*d*e*f^2 + (3*I*c^2 + 6*I*c)*f^3)*(d
*x + c))*cos(3*d*x + 3*c) - ((d*x + c)^3*f^3 - 3*d^2*e^2*f + 3*(c^2 + 2*c)*
d*e*f^2 - (c^3 + 3*c^2)*f^3 + 3*(d*e*f^2 - (c + 1)*f^3)*(d*x + c)^2 + 3*(d^
2*e^2*f - 2*(c + 1)*d*e*f^2 + (c^2 + 2*c)*f^3)*(d*x + c))*cos(2*d*x + 2*c)
+ (-I*(d*x + c)^3*f^3 + 3*I*d^2*e^2*f + (-3*I*c^2 - 6*I*c)*d*e*f^2 + (I*c^3
 + 3*I*c^2)*f^3 + (-3*I*d*e*f^2 + (3*I*c + 3*I)*f^3)*(d*x + c)^2 + (-3*I*d^
2*e^2*f + (6*I*c + 6*I)*d*e*f^2 + (-3*I*c^2 - 6*I*c)*f^3)*(d*x + c))*cos(d*
x + c) - ((d*x + c)^3*f^3 - 3*d^2*e^2*f + 3*(c^2 + 2*c)*d*e*f^2 - (c^3 + 3*
c^2)*f^3 + 3*(d*e*f^2 - (c + 1)*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c + 1)
*d*e*f^2 + (c^2 + 2*c)*f^3)*(d*x + c))*sin(3*d*x + 3*c) + (-I*(d*x + c)^3*f
^3 + 3*I*d^2*e^2*f + (-3*I*c^2 - 6*I*c)*d*e*f^2 + (I*c^3 + 3*I*c^2)*f^3 + (
-3*I*d*e*f^2 + (3*I*c + 3*I)*f^3)*(d*x + c)^2 + (-3*I*d^2*e^2*f + (6*I*c +
6*I)*d*e*f^2 + (-3*I*c^2 - 6*I*c)*f^3)*(d*x + c))*sin(2*d*x + 2*c) + ((d*x
+ c)^3*f^3 - 3*d^2*e^2*f + 3*(c^2 + 2*c)*d*e*f^2 - (c^3 + 3*c^2)*f^3 + 3*(d
*e*f^2 - (c + 1)*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*(c + 1)*d*e*f^2 + (c^2
 + 2*c)*f^3)*(d*x + c))*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 -
 2*cos(d*x + c) + 1) - (6*d^2*e^2*f - 12*c*d*e*f^2 + 6*(d*x + c)^2*f^3 + 6*
c^2*f^3 + 12*(d*e*f^2 - c*f^3)*(d*x + c) - (-6*I*d^2*e^2*f + 12*I*c*d*e*f^2
 - 6*I*(d*x + c)^2*f^3 - 6*I*c^2*f^3 + (-12*I*d*e*f^2 + 12*I*c*f^3)*(d*x +
c))*cos(3*d*x + 3*c) - 6*(d^2*e^2*f - 2*c*d*e*f^2 + (d*x + c)^2*f^3 + c^2*f
^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*cos(2*d*x + 2*c) - (6*I*d^2*e^2*f - 12*
I*c*d*e*f^2 + 6*I*(d*x + c)^2*f^3 + 6*I*c^2*f^3 + (12*I*d*e*f^2 - 12*I*c*f^
3)*(d*x + c))*cos(d*x + c) - 6*(d^2*e^2*f - 2*c*d*e*f^2 + (d*x + c)^2*f^3 +
 c^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*sin(3*d*x + 3*c) - (6*I*d^2*e^2*f
 - 12*I*c*d*e*f^2 + 6*I*(d*x + c)^2*f^3 + 6*I*c^2*f^3 + (12*I*d*e*f^2 - 12*
I*c*f^3)*(d*x + c))*sin(2*d*x + 2*c) + 6*(d^2*e^2*f - 2*c*d*e*f^2 + (d*x +
c)^2*f^3 + c^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*sin(d*x + c))*log(cos(d
*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) + (12*f^3*cos(3*d*x + 3*c)
 + 12*I*f^3*cos(2*d*x + 2*c) - 12*f^3*cos(d*x + c) + 12*I*f^3*sin(3*d*x + 3
*c) - 12*f^3*sin(2*d*x + 2*c) - 12*I*f^3*sin(d*x + c) - 12*I*f^3)*polylog(4
, -e^(I*d*x + I*c)) - (12*f^3*cos(3*d*x + 3*c) + 12*I*f^3*cos(2*d*x + 2*c)
- 12*f^3*cos(d*x + c) + 12*I*f^3*sin(3*d*x + 3*c) - 12*f^3*sin(2*d*x + 2*c)
 - 12*I*f^3*sin(d*x + c) - 12*I*f^3)*polylog(4, e^(I*d*x + I*c)) + (-24*I*f
^3*cos(3*d*x + 3*c) + 24*f^3*cos(2*d*x + 2*c) + 24*I*f^3*cos(d*x + c) + 24*
```

```
f^3*sin(3*d*x + 3*c) + 24*I*f^3*sin(2*d*x + 2*c) - 24*f^3*sin(d*x + c) - 24
*f^3)*polylog(3, I*e^(I*d*x + I*c)) - (12*d*e*f^2 + 12*(d*x + c)*f^3 - 12*(
c - 1)*f^3 - (-12*I*d*e*f^2 - 12*I*(d*x + c)*f^3 + (12*I*c - 12*I)*f^3)*cos
(3*d*x + 3*c) - 12*(d*e*f^2 + (d*x + c)*f^3 - (c - 1)*f^3)*cos(2*d*x + 2*c)
 - (12*I*d*e*f^2 + 12*I*(d*x + c)*f^3 + (-12*I*c + 12*I)*f^3)*cos(d*x + c)
- 12*(d*e*f^2 + (d*x + c)*f^3 - (c - 1)*f^3)*sin(3*d*x + 3*c) - (12*I*d*e*f
^2 + 12*I*(d*x + c)*f^3 + (-12*I*c + 12*I)*f^3)*sin(2*d*x + 2*c) + 12*(d*e*
f^2 + (d*x + c)*f^3 - (c - 1)*f^3)*sin(d*x + c))*polylog(3, -e^(I*d*x + I*c
)) + (12*d*e*f^2 + 12*(d*x + c)*f^3 - 12*(c + 1)*f^3 + (12*I*d*e*f^2 + 12*I
*(d*x + c)*f^3 + (-12*I*c - 12*I)*f^3)*cos(3*d*x + 3*c) - 12*(d*e*f^2 + (d*
x + c)*f^3 - (c + 1)*f^3)*cos(2*d*x + 2*c) + (-12*I*d*e*f^2 - 12*I*(d*x + c
)*f^3 + (12*I*c + 12*I)*f^3)*cos(d*x + c) - 12*(d*e*f^2 + (d*x + c)*f^3 - (
c + 1)*f^3)*sin(3*d*x + 3*c) + (-12*I*d*e*f^2 - 12*I*(d*x + c)*f^3 + (12*I*
c + 12*I)*f^3)*sin(2*d*x + 2*c) + 12*(d*e*f^2 + (d*x + c)*f^3 - (c + 1)*f^3
)*sin(d*x + c))*polylog(3, e^(I*d*x + I*c)) + (-8*I*(d*x + c)^3*f^3 + (-24*
I*d*e*f^2 + 24*I*c*f^3)*(d*x + c)^2 + (-24*I*d^2*e^2*f + 48*I*c*d*e*f^2 - 2
4*I*c^2*f^3)*(d*x + c))*sin(3*d*x + 3*c) - 4*(3*c^2*d*e*f^2 - (d*x + c)^3*f
^3 - c^3*f^3 - 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 - 3*(d^2*e^2*f - 2*c*d*e*f^2
 + c^2*f^3)*(d*x + c))*sin(2*d*x + 2*c) + (-12*I*c^2*d*e*f^2 + 4*I*(d*x + c
)^3*f^3 + 4*I*c^3*f^3 + (12*I*d*e*f^2 - 12*I*c*f^3)*(d*x + c)^2 + (12*I*d^2
*e^2*f - 24*I*c*d*e*f^2 + 12*I*c^2*f^3)*(d*x + c))*sin(d*x + c))/(-2*I*a*d^
3*cos(3*d*x + 3*c) + 2*a*d^3*cos(2*d*x + 2*c) + 2*I*a*d^3*cos(d*x + c) + 2*
a*d^3*sin(3*d*x + 3*c) + 2*I*a*d^3*sin(2*d*x + 2*c) - 2*a*d^3*sin(d*x + c)
- 2*a*d^3))/d
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sin(c + d*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^3 \csc^2(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{f^3x^3\csc^2(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{3ef^2x^2\csc^2(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{3e^2fx\csc^2(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csc(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**3*csc(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(f**3*x**3*
csc(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(3*e*f**2*x**2*csc(c + d*x
```

```
)**2/(sin(c + d*x) + 1), x) + Integral(3*e**2*f*x*csc(c + d*x)**2/(sin(c +
d*x) + 1), x))/a
```

3.204 $\int \frac{(e+fx)^2 \csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=327

$$-\frac{4if^2\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}-\frac{if^2\text{Li}_2\left(e^{2i(c+dx)}\right)}{ad^3}+\frac{2f^2\text{Li}_3\left(-e^{i(c+dx)}\right)}{ad^3}-\frac{2f^2\text{Li}_3\left(e^{i(c+dx)}\right)}{ad^3}-\frac{2if(e+fx)\text{Li}_2\left(-e^{i(c+dx)}\right)}{ad^2}+\frac{2if(e+\cdots}{}$$

```
[Out] -2*I*(f*x+e)^2/a/d+2*(f*x+e)^2*arctanh(exp(I*(d*x+c)))/a/d-(f*x+e)^2*cot(1/
2*c+1/4*Pi+1/2*d*x)/a/d-(f*x+e)^2*cot(d*x+c)/a/d+4*f*(f*x+e)*ln(1-I*exp(I*(
d*x+c)))/a/d^2+2*f*(f*x+e)*ln(1-exp(2*I*(d*x+c)))/a/d^2-2*I*f*(f*x+e)*polyl
og(2,-exp(I*(d*x+c)))/a/d^2-4*I*f^2*polylog(2,I*exp(I*(d*x+c)))/a/d^3+2*I*f
*(f*x+e)*polylog(2,exp(I*(d*x+c)))/a/d^2-I*f^2*polylog(2,exp(2*I*(d*x+c)))/
a/d^3+2*f^2*polylog(3,-exp(I*(d*x+c)))/a/d^3-2*f^2*polylog(3,exp(I*(d*x+c))
)/a/d^3
```

Rubi [A] time = 0.51, antiderivative size = 327, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 11, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.393, Rules used = {4535, 4184, 3717, 2190, 2279, 2391, 4183, 2531, 2282, 6589, 3318}

$$-\frac{2if(e+fx)\text{PolyLog}\left(2,-e^{i(c+dx)}\right)}{ad^2}+\frac{2if(e+fx)\text{PolyLog}\left(2,e^{i(c+dx)}\right)}{ad^2}-\frac{4if^2\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}-\frac{if^2\text{PolyLog}(\cdots}{ad\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csc[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-2*I)*(e + f*x)^2)/(a*d) + (2*(e + f*x)^2*ArcTanh[E^(I*(c + d*x))])/(a*d)
 - ((e + f*x)^2*Cot[c/2 + Pi/4 + (d*x)/2])/(a*d) - ((e + f*x)^2*Cot[c + d*x
])/(a*d) + (4*f*(e + f*x)*Log[1 - I*E^(I*(c + d*x))])/(a*d^2) + (2*f*(e + f
*x)*Log[1 - E^((2*I)*(c + d*x))])/(a*d^2) - ((2*I)*f*(e + f*x)*PolyLog[2, -
E^(I*(c + d*x))])/(a*d^2) - ((4*I)*f^2*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^
3) + ((2*I)*f*(e + f*x)*PolyLog[2, E^(I*(c + d*x))])/(a*d^2) - (I*f^2*PolyL
og[2, E^((2*I)*(c + d*x))])/(a*d^3) + (2*f^2*PolyLog[3, -E^(I*(c + d*x))])/
(a*d^3) - (2*f^2*PolyLog[3, E^(I*(c + d*x))])/(a*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
```

```
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\csc^2(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\csc^2(c+dx)\,dx}{a} - \int \frac{(e+fx)^2\csc(c+dx)}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{(e+fx)^2\cot(c+dx)}{ad} - \frac{\int (e+fx)^2\csc(c+dx)\,dx}{a} + \frac{(2f)\int (e+fx)\cot(c+dx)\,d}{ad}$$

$$= -\frac{i(e+fx)^2}{ad} + \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^2\cot(c+dx)}{ad} + \frac{\int (e+fx)^2\,\mathrm{cs}}{}$$

$$= -\frac{i(e+fx)^2}{ad} + \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+fx)}{}$$

$$= -\frac{2i(e+fx)^2}{ad} + \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+f}{}$$

$$= -\frac{2i(e+fx)^2}{ad} + \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+f}{}$$

$$= -\frac{2i(e+fx)^2}{ad} + \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+f}{}$$

$$= -\frac{2i(e+fx)^2}{ad} + \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)^2\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+f}{}$$

Mathematica [B] time = 8.54, size = 693, normalized size = 2.12

$$-\frac{4f(\cos(c)+i\sin(c))\left(\frac{f(\cos(c)-i(\sin(c)+1))\mathrm{Li}_2(-i\cos(c+dx)-\sin(c+dx))}{d^2} - \frac{(\sin(c)+i\cos(c)+1)(e+fx)\log(\sin(c+dx)+i\cos(c+dx)+1)}{d} + \frac{(\cos}{}\right.}{ad(\cos(c)+i(\sin(c)+1))}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csc[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (((-2*I)*d^2*(e + f*x)^2)/(-1 + E^((2*I)*c)) - 2*d*(d*e - f)*f*x*Log[1 - E^
((-I)*(c + d*x))] - d^2*f^2*x^2*Log[1 - E^((-I)*(c + d*x))] + 2*d*f*(d*e +
f)*x*Log[1 + E^((-I)*(c + d*x))] + d^2*f^2*x^2*Log[1 + E^((-I)*(c + d*x))]
+ I*d*e*(d*e - 2*f)*(d*x + I*Log[1 - E^(I*(c + d*x))]) + d*e*(d*e + 2*f)*((
-I)*d*x + Log[1 + E^(I*(c + d*x))]) + (2*I)*f*(d*e + f)*PolyLog[2, -E^((-I)
*(c + d*x))] - (2*I)*(d*e - f)*f*PolyLog[2, E^((-I)*(c + d*x))] + 2*f^2*(I*
```

```
d*x*PolyLog[2, -E^((-I)*(c + d*x))] + PolyLog[3, -E^((-I)*(c + d*x))]) - (2
*I)*f^2*(d*x*PolyLog[2, E^((-I)*(c + d*x))] - I*PolyLog[3, E^((-I)*(c + d*x
))]))/(a*d^3) - (4*f*(Cos[c] + I*Sin[c])*(((e + f*x)^2*(Cos[c] - I*Sin[c]))
/(2*f) - ((e + f*x)*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(1 + I*Cos[c] +
Sin[c]))/d + (f*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*x]]*(Cos[c] - I*(1
 + Sin[c])))/d^2))/(a*d*(Cos[c] + I*(1 + Sin[c]))) + (Csc[c/2]*Csc[c/2 + (d
*x)/2]*(e^2*Sin[(d*x)/2] + 2*e*f*x*Sin[(d*x)/2] + f^2*x^2*Sin[(d*x)/2]))/(2
*a*d) + (Sec[c/2]*Sec[c/2 + (d*x)/2]*(e^2*Sin[(d*x)/2] + 2*e*f*x*Sin[(d*x)/
2] + f^2*x^2*Sin[(d*x)/2]))/(2*a*d) + (2*(e^2*Sin[(d*x)/2] + 2*e*f*x*Sin[(d
*x)/2] + f^2*x^2*Sin[(d*x)/2]))/(a*d*(Cos[c/2] + Sin[c/2])*(Cos[c/2 + (d*x)
/2] + Sin[c/2 + (d*x)/2]))
```

fricas [C] time = 0.60, size = 2533, normalized size = 7.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")

[Out] -1/2*(2*d^2*f^2*x^2 + 4*d^2*e*f*x + 2*d^2*e^2 - 4*(d^2*f^2*x^2 + 2*d^2*e*f*
x + d^2*e^2)*cos(d*x + c)^2 - 2*(d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*cos(d
*x + c) + (2*I*d*f^2*x + 2*I*d*e*f + (-2*I*d*f^2*x - 2*I*d*e*f + 2*I*f^2)*c
os(d*x + c)^2 - 2*I*f^2 + (2*I*d*f^2*x + 2*I*d*e*f - 2*I*f^2 + (2*I*d*f^2*x
 + 2*I*d*e*f - 2*I*f^2)*cos(d*x + c))*sin(d*x + c))*dilog(cos(d*x + c) + I*
sin(d*x + c)) + (-2*I*d*f^2*x - 2*I*d*e*f + (2*I*d*f^2*x + 2*I*d*e*f - 2*I*
f^2)*cos(d*x + c)^2 + 2*I*f^2 + (-2*I*d*f^2*x - 2*I*d*e*f + 2*I*f^2 + (-2*I
*d*f^2*x - 2*I*d*e*f + 2*I*f^2)*cos(d*x + c))*sin(d*x + c))*dilog(cos(d*x +
 c) - I*sin(d*x + c)) + (4*I*f^2*cos(d*x + c)^2 - 4*I*f^2 + (-4*I*f^2*cos(d
*x + c) - 4*I*f^2)*sin(d*x + c))*dilog(I*cos(d*x + c) - sin(d*x + c)) + (-4
*I*f^2*cos(d*x + c)^2 + 4*I*f^2 + (4*I*f^2*cos(d*x + c) + 4*I*f^2)*sin(d*x
+ c))*dilog(-I*cos(d*x + c) - sin(d*x + c)) + (2*I*d*f^2*x + 2*I*d*e*f + (-
2*I*d*f^2*x - 2*I*d*e*f - 2*I*f^2)*cos(d*x + c)^2 + 2*I*f^2 + (2*I*d*f^2*x
+ 2*I*d*e*f + 2*I*f^2 + (2*I*d*f^2*x + 2*I*d*e*f + 2*I*f^2)*cos(d*x + c))*s
in(d*x + c))*dilog(-cos(d*x + c) + I*sin(d*x + c)) + (-2*I*d*f^2*x - 2*I*d*
e*f + (2*I*d*f^2*x + 2*I*d*e*f + 2*I*f^2)*cos(d*x + c)^2 - 2*I*f^2 + (-2*I*
d*f^2*x - 2*I*d*e*f - 2*I*f^2 + (-2*I*d*f^2*x - 2*I*d*e*f - 2*I*f^2)*cos(d*
x + c))*sin(d*x + c))*dilog(-cos(d*x + c) - I*sin(d*x + c)) + (d^2*f^2*x^2
+ d^2*e^2 + 2*d*e*f - (d^2*f^2*x^2 + d^2*e^2 + 2*d*e*f + 2*(d^2*e*f + d*f^2
)*x)*cos(d*x + c)^2 + 2*(d^2*e*f + d*f^2)*x + (d^2*f^2*x^2 + d^2*e^2 + 2*d*
e*f + 2*(d^2*e*f + d*f^2)*x + (d^2*f^2*x^2 + d^2*e^2 + 2*d*e*f + 2*(d^2*e*f
 + d*f^2)*x)*cos(d*x + c))*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c)
+ 1) + 4*(d*e*f - c*f^2 - (d*e*f - c*f^2)*cos(d*x + c)^2 + (d*e*f - c*f^2 +
 (d*e*f - c*f^2)*cos(d*x + c))*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x +
 c) + I) + (d^2*f^2*x^2 + d^2*e^2 + 2*d*e*f - (d^2*f^2*x^2 + d^2*e^2 + 2*d*
e*f + 2*(d^2*e*f + d*f^2)*x)*cos(d*x + c)^2 + 2*(d^2*e*f + d*f^2)*x + (d^2*
```

```
f^2*x^2 + d^2*e^2 + 2*d*e*f + 2*(d^2*e*f + d*f^2)*x + (d^2*f^2*x^2 + d^2*e^
2 + 2*d*e*f + 2*(d^2*e*f + d*f^2)*x)*cos(d*x + c))*sin(d*x + c))*log(cos(d*
x + c) - I*sin(d*x + c) + 1) + 4*(d*f^2*x + c*f^2 - (d*f^2*x + c*f^2)*cos(d
*x + c)^2 + (d*f^2*x + c*f^2 + (d*f^2*x + c*f^2)*cos(d*x + c))*sin(d*x + c)
)*log(I*cos(d*x + c) + sin(d*x + c) + 1) + 4*(d*f^2*x + c*f^2 - (d*f^2*x +
c*f^2)*cos(d*x + c)^2 + (d*f^2*x + c*f^2 + (d*f^2*x + c*f^2)*cos(d*x + c))*
sin(d*x + c))*log(-I*cos(d*x + c) + sin(d*x + c) + 1) - (d^2*e^2 - 2*(c + 1
)*d*e*f + (c^2 + 2*c)*f^2 - (d^2*e^2 - 2*(c + 1)*d*e*f + (c^2 + 2*c)*f^2)*c
os(d*x + c)^2 + (d^2*e^2 - 2*(c + 1)*d*e*f + (c^2 + 2*c)*f^2 + (d^2*e^2 - 2
*(c + 1)*d*e*f + (c^2 + 2*c)*f^2)*cos(d*x + c))*sin(d*x + c))*log(-1/2*cos(
d*x + c) + 1/2*I*sin(d*x + c) + 1/2) - (d^2*e^2 - 2*(c + 1)*d*e*f + (c^2 +
2*c)*f^2 - (d^2*e^2 - 2*(c + 1)*d*e*f + (c^2 + 2*c)*f^2)*cos(d*x + c)^2 + (
d^2*e^2 - 2*(c + 1)*d*e*f + (c^2 + 2*c)*f^2 + (d^2*e^2 - 2*(c + 1)*d*e*f +
(c^2 + 2*c)*f^2)*cos(d*x + c))*sin(d*x + c))*log(-1/2*cos(d*x + c) - 1/2*I*
sin(d*x + c) + 1/2) - (d^2*f^2*x^2 + 2*c*d*e*f - (c^2 + 2*c)*f^2 - (d^2*f^2
*x^2 + 2*c*d*e*f - (c^2 + 2*c)*f^2 + 2*(d^2*e*f - d*f^2)*x)*cos(d*x + c)^2
+ 2*(d^2*e*f - d*f^2)*x + (d^2*f^2*x^2 + 2*c*d*e*f - (c^2 + 2*c)*f^2 + 2*(d
^2*e*f - d*f^2)*x + (d^2*f^2*x^2 + 2*c*d*e*f - (c^2 + 2*c)*f^2 + 2*(d^2*e*f
 - d*f^2)*x)*cos(d*x + c))*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c)
 + 1) + 4*(d*e*f - c*f^2 - (d*e*f - c*f^2)*cos(d*x + c)^2 + (d*e*f - c*f^2
+ (d*e*f - c*f^2)*cos(d*x + c))*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x
 + c) + I) - (d^2*f^2*x^2 + 2*c*d*e*f - (c^2 + 2*c)*f^2 - (d^2*f^2*x^2 + 2*
c*d*e*f - (c^2 + 2*c)*f^2 + 2*(d^2*e*f - d*f^2)*x)*cos(d*x + c)^2 + 2*(d^2*
e*f - d*f^2)*x + (d^2*f^2*x^2 + 2*c*d*e*f - (c^2 + 2*c)*f^2 + 2*(d^2*e*f -
d*f^2)*x + (d^2*f^2*x^2 + 2*c*d*e*f - (c^2 + 2*c)*f^2 + 2*(d^2*e*f - d*f^2)
*x)*cos(d*x + c))*sin(d*x + c))*log(-cos(d*x + c) - I*sin(d*x + c) + 1) + 2
*(f^2*cos(d*x + c)^2 - f^2 - (f^2*cos(d*x + c) + f^2)*sin(d*x + c))*polylog
(3, cos(d*x + c) + I*sin(d*x + c)) + 2*(f^2*cos(d*x + c)^2 - f^2 - (f^2*cos
(d*x + c) + f^2)*sin(d*x + c))*polylog(3, cos(d*x + c) - I*sin(d*x + c)) -
2*(f^2*cos(d*x + c)^2 - f^2 - (f^2*cos(d*x + c) + f^2)*sin(d*x + c))*polylo
g(3, -cos(d*x + c) + I*sin(d*x + c)) - 2*(f^2*cos(d*x + c)^2 - f^2 - (f^2*c
os(d*x + c) + f^2)*sin(d*x + c))*polylog(3, -cos(d*x + c) - I*sin(d*x + c))
 - 2*(d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2 + 2*(d^2*f^2*x^2 + 2*d^2*e*f*x +
d^2*e^2)*cos(d*x + c))*sin(d*x + c))/(a*d^3*cos(d*x + c)^2 - a*d^3 - (a*d^3
*cos(d*x + c) + a*d^3)*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.28, size = 942, normalized size = 2.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csc(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] -2/a/d^3*f^2*c*ln(exp(I*(d*x+c))-1)+2/a/d^2*e*f*ln(exp(I*(d*x+c))+1)+2/a/d^
2*e*f*ln(exp(I*(d*x+c))-1)+2/a/d^2*f^2*ln(1-exp(I*(d*x+c)))*x+2/a/d^3*f^2*l
n(1-exp(I*(d*x+c)))*c+2/a/d^2*f^2*ln(exp(I*(d*x+c))+1)*x+1/a/d*e^2*ln(exp(I
*(d*x+c))+1)-1/a/d*e^2*ln(exp(I*(d*x+c))-1)+4/a/d^2*f*ln(exp(I*(d*x+c))+I)*
e-8/a/d^2*f*ln(exp(I*(d*x+c)))*e+4/a/d^2*f^2*ln(1-I*exp(I*(d*x+c)))*x+4/a/d
^3*f^2*ln(1-I*exp(I*(d*x+c)))*c-4/a/d^3*f^2*c*ln(exp(I*(d*x+c))+I)+8/a/d^3*
f^2*c*ln(exp(I*(d*x+c)))-2*I/a/d^3*f^2*polylog(2,-exp(I*(d*x+c)))-4*I/a/d*f
^2*x^2-4*I/a/d^3*f^2*c^2+2/a/d^2*e*f*c*ln(exp(I*(d*x+c))-1)-2/a/d*ln(1-exp(
I*(d*x+c)))*e*f*x+2/a/d*ln(exp(I*(d*x+c))+1)*e*f*x-2/a/d^2*ln(1-exp(I*(d*x+
c)))*c*e*f+1/a/d^3*f^2*ln(1-exp(I*(d*x+c)))*c^2+1/a/d*f^2*ln(exp(I*(d*x+c))
+1)*x^2-1/a/d^3*f^2*c^2*ln(exp(I*(d*x+c))-1)-1/a/d*f^2*ln(1-exp(I*(d*x+c)))
*x^2-8*I/a/d^2*f^2*c*x-2*I/a/d^2*f^2*polylog(2,-exp(I*(d*x+c)))*x+2*I/a/d^2
*e*f*polylog(2,exp(I*(d*x+c)))-2*I/a/d^2*e*f*polylog(2,-exp(I*(d*x+c)))+2*I
/a/d^2*f^2*polylog(2,exp(I*(d*x+c)))*x-2*(-2*f^2*x^2+I*exp(I*(d*x+c))*f^2*x
^2-4*f*e*x+2*I*exp(I*(d*x+c))*e*f*x-2*e^2+I*exp(I*(d*x+c))*e^2+f^2*x^2*exp(
2*I*(d*x+c))+2*e*f*x*exp(2*I*(d*x+c))+e^2*exp(2*I*(d*x+c)))/(exp(2*I*(d*x+c
))-1)/(exp(I*(d*x+c))+I)/d/a-2*I*f^2*polylog(2,exp(I*(d*x+c)))/a/d^3+2*f^2*
polylog(3,-exp(I*(d*x+c)))/a/d^3-2*f^2*polylog(3,exp(I*(d*x+c)))/a/d^3-4*I*
f^2*polylog(2,I*exp(I*(d*x+c)))/a/d^3
```

maxima [B] time = 3.43, size = 3706, normalized size = 11.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(2*c*e*f*((5*sin(d*x + c)/(cos(d*x + c) + 1) + 1)/(a*d*sin(d*x + c)/(co
s(d*x + c) + 1) + a*d*sin(d*x + c)^2/(cos(d*x + c) + 1)^2) + 2*log(sin(d*x
+ c)/(cos(d*x + c) + 1))/(a*d) - sin(d*x + c)/(a*d*(cos(d*x + c) + 1))) - e
^2*((5*sin(d*x + c)/(cos(d*x + c) + 1) + 1)/(a*sin(d*x + c)/(cos(d*x + c) +
 1) + a*sin(d*x + c)^2/(cos(d*x + c) + 1)^2) + 2*log(sin(d*x + c)/(cos(d*x
+ c) + 1))/a - sin(d*x + c)/(a*(cos(d*x + c) + 1))) + 2*(-8*I*c^2*f^2 + (-8
*I*d*e*f + 8*I*c*f^2 + 8*(d*e*f - c*f^2)*cos(3*d*x + 3*c) + (8*I*d*e*f - 8*
I*c*f^2)*cos(2*d*x + 2*c) - 8*(d*e*f - c*f^2)*cos(d*x + c) + (8*I*d*e*f - 8
*I*c*f^2)*sin(3*d*x + 3*c) - 8*(d*e*f - c*f^2)*sin(2*d*x + 2*c) + (-8*I*d*e
*f + 8*I*c*f^2)*sin(d*x + c))*arctan2(sin(d*x + c) + 1, cos(d*x + c)) - (8*
```

(d*x + c)*f^2*cos(3*d*x + 3*c) + 8*I*(d*x + c)*f^2*cos(2*d*x + 2*c) - 8*(d*
x + c)*f^2*cos(d*x + c) + 8*I*(d*x + c)*f^2*sin(3*d*x + 3*c) - 8*(d*x + c)*
f^2*sin(2*d*x + 2*c) - 8*I*(d*x + c)*f^2*sin(d*x + c) - 8*I*(d*x + c)*f^2)*
arctan2(cos(d*x + c), sin(d*x + c) + 1) + (-2*I*(d*x + c)^2*f^2 - 4*I*d*e*f
 + (-2*I*c^2 + 4*I*c)*f^2 + (-4*I*d*e*f + (4*I*c - 4*I)*f^2)*(d*x + c) + 2*
((d*x + c)^2*f^2 + 2*d*e*f + (c^2 - 2*c)*f^2 + 2*(d*e*f - (c - 1)*f^2)*(d*x
 + c))*cos(3*d*x + 3*c) + (2*I*(d*x + c)^2*f^2 + 4*I*d*e*f + (2*I*c^2 - 4*I
*c)*f^2 + (4*I*d*e*f + (-4*I*c + 4*I)*f^2)*(d*x + c))*cos(2*d*x + 2*c) - 2*
((d*x + c)^2*f^2 + 2*d*e*f + (c^2 - 2*c)*f^2 + 2*(d*e*f - (c - 1)*f^2)*(d*x
 + c))*cos(d*x + c) + (2*I*(d*x + c)^2*f^2 + 4*I*d*e*f + (2*I*c^2 - 4*I*c)*
f^2 + (4*I*d*e*f + (-4*I*c + 4*I)*f^2)*(d*x + c))*sin(3*d*x + 3*c) - 2*((d*
x + c)^2*f^2 + 2*d*e*f + (c^2 - 2*c)*f^2 + 2*(d*e*f - (c - 1)*f^2)*(d*x + c
))*sin(2*d*x + 2*c) + (-2*I*(d*x + c)^2*f^2 - 4*I*d*e*f + (-2*I*c^2 + 4*I*c
)*f^2 + (-4*I*d*e*f + (4*I*c - 4*I)*f^2)*(d*x + c))*sin(d*x + c))*arctan2(s
in(d*x + c), cos(d*x + c) + 1) + (-4*I*d*e*f + (2*I*c^2 + 4*I*c)*f^2 + 2*(2
*d*e*f - (c^2 + 2*c)*f^2)*cos(3*d*x + 3*c) + (4*I*d*e*f + (-2*I*c^2 - 4*I*c
)*f^2)*cos(2*d*x + 2*c) - 2*(2*d*e*f - (c^2 + 2*c)*f^2)*cos(d*x + c) + (4*I
*d*e*f + (-2*I*c^2 - 4*I*c)*f^2)*sin(3*d*x + 3*c) - 2*(2*d*e*f - (c^2 + 2*c
)*f^2)*sin(2*d*x + 2*c) + (-4*I*d*e*f + (2*I*c^2 + 4*I*c)*f^2)*sin(d*x + c)
)*arctan2(sin(d*x + c), cos(d*x + c) - 1) + (-2*I*(d*x + c)^2*f^2 + (-4*I*d
*e*f + (4*I*c + 4*I)*f^2)*(d*x + c) + 2*((d*x + c)^2*f^2 + 2*(d*e*f - (c +
1)*f^2)*(d*x + c))*cos(3*d*x + 3*c) + (2*I*(d*x + c)^2*f^2 + (4*I*d*e*f + (
-4*I*c - 4*I)*f^2)*(d*x + c))*cos(2*d*x + 2*c) - 2*((d*x + c)^2*f^2 + 2*(d*
e*f - (c + 1)*f^2)*(d*x + c))*cos(d*x + c) + (2*I*(d*x + c)^2*f^2 + (4*I*d*
e*f + (-4*I*c - 4*I)*f^2)*(d*x + c))*sin(3*d*x + 3*c) - 2*((d*x + c)^2*f^2
+ 2*(d*e*f - (c + 1)*f^2)*(d*x + c))*sin(2*d*x + 2*c) + (-2*I*(d*x + c)^2*f
^2 + (-4*I*d*e*f + (4*I*c + 4*I)*f^2)*(d*x + c))*sin(d*x + c))*arctan2(sin(
d*x + c), -cos(d*x + c) + 1) - 8*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x
+ c))*cos(3*d*x + 3*c) + (-4*I*(d*x + c)^2*f^2 + 4*I*c^2*f^2 + (-8*I*d*e*f
+ 8*I*c*f^2)*(d*x + c))*cos(2*d*x + 2*c) + 4*((d*x + c)^2*f^2 - c^2*f^2 + 2
*(d*e*f - c*f^2)*(d*x + c))*cos(d*x + c) - (8*f^2*cos(3*d*x + 3*c) + 8*I*f^
2*cos(2*d*x + 2*c) - 8*f^2*cos(d*x + c) + 8*I*f^2*sin(3*d*x + 3*c) - 8*f^2*
sin(2*d*x + 2*c) - 8*I*f^2*sin(d*x + c) - 8*I*f^2)*dilog(I*e^(I*d*x + I*c))
 + (4*I*d*e*f + 4*I*(d*x + c)*f^2 + (-4*I*c + 4*I)*f^2 - 4*(d*e*f + (d*x +
c)*f^2 - (c - 1)*f^2)*cos(3*d*x + 3*c) + (-4*I*d*e*f - 4*I*(d*x + c)*f^2 +
(4*I*c - 4*I)*f^2)*cos(2*d*x + 2*c) + 4*(d*e*f + (d*x + c)*f^2 - (c - 1)*f^
2)*cos(d*x + c) + (-4*I*d*e*f - 4*I*(d*x + c)*f^2 + (4*I*c - 4*I)*f^2)*sin(
3*d*x + 3*c) + 4*(d*e*f + (d*x + c)*f^2 - (c - 1)*f^2)*sin(2*d*x + 2*c) + (
4*I*d*e*f + 4*I*(d*x + c)*f^2 + (-4*I*c + 4*I)*f^2)*sin(d*x + c))*dilog(-e^
(I*d*x + I*c)) + (-4*I*d*e*f - 4*I*(d*x + c)*f^2 + (4*I*c + 4*I)*f^2 + 4*(d
*e*f + (d*x + c)*f^2 - (c + 1)*f^2)*cos(3*d*x + 3*c) + (4*I*d*e*f + 4*I*(d*
x + c)*f^2 + (-4*I*c - 4*I)*f^2)*cos(2*d*x + 2*c) - 4*(d*e*f + (d*x + c)*f^
2 - (c + 1)*f^2)*cos(d*x + c) + (4*I*d*e*f + 4*I*(d*x + c)*f^2 + (-4*I*c -
4*I)*f^2)*sin(3*d*x + 3*c) - 4*(d*e*f + (d*x + c)*f^2 - (c + 1)*f^2)*sin(2*
d*x + 2*c) + (-4*I*d*e*f - 4*I*(d*x + c)*f^2 + (4*I*c + 4*I)*f^2)*sin(d*x +

```
c))*dilog(e^(I*d*x + I*c)) - ((d*x + c)^2*f^2 + 2*d*e*f + (c^2 - 2*c)*f^2
+ 2*(d*e*f - (c - 1)*f^2)*(d*x + c) - (-I*(d*x + c)^2*f^2 - 2*I*d*e*f + (-I
*c^2 + 2*I*c)*f^2 + (-2*I*d*e*f + (2*I*c - 2*I)*f^2)*(d*x + c))*cos(3*d*x +
 3*c) - ((d*x + c)^2*f^2 + 2*d*e*f + (c^2 - 2*c)*f^2 + 2*(d*e*f - (c - 1)*f
^2)*(d*x + c))*cos(2*d*x + 2*c) - (I*(d*x + c)^2*f^2 + 2*I*d*e*f + (I*c^2 -
 2*I*c)*f^2 + (2*I*d*e*f + (-2*I*c + 2*I)*f^2)*(d*x + c))*cos(d*x + c) - ((
d*x + c)^2*f^2 + 2*d*e*f + (c^2 - 2*c)*f^2 + 2*(d*e*f - (c - 1)*f^2)*(d*x +
 c))*sin(3*d*x + 3*c) - (I*(d*x + c)^2*f^2 + 2*I*d*e*f + (I*c^2 - 2*I*c)*f^
2 + (2*I*d*e*f + (-2*I*c + 2*I)*f^2)*(d*x + c))*sin(2*d*x + 2*c) + ((d*x +
c)^2*f^2 + 2*d*e*f + (c^2 - 2*c)*f^2 + 2*(d*e*f - (c - 1)*f^2)*(d*x + c))*s
in(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*cos(d*x + c) + 1) + ((
d*x + c)^2*f^2 - 2*d*e*f + (c^2 + 2*c)*f^2 + 2*(d*e*f - (c + 1)*f^2)*(d*x +
 c) + (I*(d*x + c)^2*f^2 - 2*I*d*e*f + (I*c^2 + 2*I*c)*f^2 + (2*I*d*e*f + (
-2*I*c - 2*I)*f^2)*(d*x + c))*cos(3*d*x + 3*c) - ((d*x + c)^2*f^2 - 2*d*e*f
 + (c^2 + 2*c)*f^2 + 2*(d*e*f - (c + 1)*f^2)*(d*x + c))*cos(2*d*x + 2*c) +
(-I*(d*x + c)^2*f^2 + 2*I*d*e*f + (-I*c^2 - 2*I*c)*f^2 + (-2*I*d*e*f + (2*I
*c + 2*I)*f^2)*(d*x + c))*cos(d*x + c) - ((d*x + c)^2*f^2 - 2*d*e*f + (c^2
+ 2*c)*f^2 + 2*(d*e*f - (c + 1)*f^2)*(d*x + c))*sin(3*d*x + 3*c) + (-I*(d*x
 + c)^2*f^2 + 2*I*d*e*f + (-I*c^2 - 2*I*c)*f^2 + (-2*I*d*e*f + (2*I*c + 2*I
)*f^2)*(d*x + c))*sin(2*d*x + 2*c) + ((d*x + c)^2*f^2 - 2*d*e*f + (c^2 + 2*
c)*f^2 + 2*(d*e*f - (c + 1)*f^2)*(d*x + c))*sin(d*x + c))*log(cos(d*x + c)^
2 + sin(d*x + c)^2 - 2*cos(d*x + c) + 1) - (4*d*e*f + 4*(d*x + c)*f^2 - 4*c
*f^2 - (-4*I*d*e*f - 4*I*(d*x + c)*f^2 + 4*I*c*f^2)*cos(3*d*x + 3*c) - 4*(d
*e*f + (d*x + c)*f^2 - c*f^2)*cos(2*d*x + 2*c) - (4*I*d*e*f + 4*I*(d*x + c)
*f^2 - 4*I*c*f^2)*cos(d*x + c) - 4*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(3*d*
x + 3*c) - (4*I*d*e*f + 4*I*(d*x + c)*f^2 - 4*I*c*f^2)*sin(2*d*x + 2*c) + 4
*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x
 + c)^2 + 2*sin(d*x + c) + 1) + (-4*I*f^2*cos(3*d*x + 3*c) + 4*f^2*cos(2*d*
x + 2*c) + 4*I*f^2*cos(d*x + c) + 4*f^2*sin(3*d*x + 3*c) + 4*I*f^2*sin(2*d*
x + 2*c) - 4*f^2*sin(d*x + c) - 4*f^2)*polylog(3, -e^(I*d*x + I*c)) + (4*I*
f^2*cos(3*d*x + 3*c) - 4*f^2*cos(2*d*x + 2*c) - 4*I*f^2*cos(d*x + c) - 4*f^
2*sin(3*d*x + 3*c) - 4*I*f^2*sin(2*d*x + 2*c) + 4*f^2*sin(d*x + c) + 4*f^2)
*polylog(3, e^(I*d*x + I*c)) + (-8*I*(d*x + c)^2*f^2 + (-16*I*d*e*f + 16*I*
c*f^2)*(d*x + c))*sin(3*d*x + 3*c) + 4*((d*x + c)^2*f^2 - c^2*f^2 + 2*(d*e*
f - c*f^2)*(d*x + c))*sin(2*d*x + 2*c) + (4*I*(d*x + c)^2*f^2 - 4*I*c^2*f^2
 + (8*I*d*e*f - 8*I*c*f^2)*(d*x + c))*sin(d*x + c))/(-2*I*a*d^2*cos(3*d*x +
 3*c) + 2*a*d^2*cos(2*d*x + 2*c) + 2*I*a*d^2*cos(d*x + c) + 2*a*d^2*sin(3*d
*x + 3*c) + 2*I*a*d^2*sin(2*d*x + 2*c) - 2*a*d^2*sin(d*x + c) - 2*a*d^2))/d
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sin(c + d*x)^2*(a + a*sin(c + d*x))),x)
```

[Out] \text{Hanged}

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^{2}\csc^{2}\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx+\int \frac{f^{2}x^{2}\csc^{2}\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx+\int \frac{2efx\csc^{2}\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csc(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**2*csc(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(f**2*x**2*
csc(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(2*e*f*x*csc(c + d*x)**2/(
sin(c + d*x) + 1), x))/a
```

3.205 $\int \frac{(e+fx)\csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=169

$$-\frac{if\text{Li}_2\left(-e^{i(c+dx)}\right)}{ad^2}+\frac{if\text{Li}_2\left(e^{i(c+dx)}\right)}{ad^2}+\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}+\frac{f\log(\sin(c+dx))}{ad^2}-\frac{(e+fx)\cot\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)}{ad}-$$

```
[Out] 2*(f*x+e)*arctanh(exp(I*(d*x+c)))/a/d-(f*x+e)*cot(1/2*c+1/4*Pi+1/2*d*x)/a/d
-(f*x+e)*cot(d*x+c)/a/d+2*f*ln(sin(1/2*c+1/4*Pi+1/2*d*x))/a/d^2+f*ln(sin(d*
x+c))/a/d^2-I*f*polylog(2,-exp(I*(d*x+c)))/a/d^2+I*f*polylog(2,exp(I*(d*x+c
)))/a/d^2
```

Rubi [A] time = 0.19, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {4535, 4184, 3475, 4183, 2279, 2391, 3318}

$$-\frac{if\text{PolyLog}\left(2,-e^{i(c+dx)}\right)}{ad^2}+\frac{if\text{PolyLog}\left(2,e^{i(c+dx)}\right)}{ad^2}+\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}+\frac{f\log(\sin(c+dx))}{ad^2}-\frac{(e+fx)\text{co}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csc[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (2*(e + f*x)*ArcTanh[E^(I*(c + d*x))])/(a*d) - ((e + f*x)*Cot[c/2 + Pi/4 +
(d*x)/2])/(a*d) - ((e + f*x)*Cot[c + d*x])/(a*d) + (2*f*Log[Sin[c/2 + Pi/4
+ (d*x)/2]])/(a*d^2) + (f*Log[Sin[c + d*x]])/(a*d^2) - (I*f*PolyLog[2, -E^(
I*(c + d*x))])/(a*d^2) + (I*f*PolyLog[2, E^(I*(c + d*x))])/(a*d^2)
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
```

```
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rubi steps

$$\int \frac{(e+fx)\csc^2(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)\csc^2(c+dx)\,dx}{a} - \int \frac{(e+fx)\csc(c+dx)}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{(e+fx)\cot(c+dx)}{ad} - \frac{\int (e+fx)\csc(c+dx)\,dx}{a} + \frac{f\int \cot(c+dx)\,dx}{ad} + \int \frac{}{a+a}$$

$$= \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)\cot(c+dx)}{ad} + \frac{f\log(\sin(c+dx))}{ad^2} + \frac{\int (e+f}{}$$

$$= \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+fx)\cot(c+dx)}{ad} + \frac{f}{}$$

$$= \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} - \frac{(e+fx)\cot(c+dx)}{ad} + \frac{2}{}$$

Mathematica [B] time = 1.80, size = 396, normalized size = 2.34

$$\frac{\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)\left(4d(e+fx)\sin\left(\frac{1}{2}(c+dx)\right)+d(e+fx)\sin\left(\frac{1}{2}(c+dx)\right)\left(\tan\left(\frac{1}{2}(c+dx)\right)+1\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csc[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((Cos[(c + d*x)/2] + Sin[(c + d*x)/2])*(-(d*(e + f*x)*Cos[(c + d*x)/2]*(1 +
 Cot[(c + d*x)/2])) + 4*d*(e + f*x)*Sin[(c + d*x)/2] - 2*f*(c + d*x)*(Cos[(
c + d*x)/2] + Sin[(c + d*x)/2]) + 4*f*Log[Cos[(c + d*x)/2] + Sin[(c + d*x)/
2]]*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) + 2*f*Log[Sin[c + d*x]]*(Cos[(c +
 d*x)/2] + Sin[(c + d*x)/2]) - 2*d*e*Log[Tan[(c + d*x)/2]]*(Cos[(c + d*x)/2
] + Sin[(c + d*x)/2]) + 2*c*f*Log[Tan[(c + d*x)/2]]*(Cos[(c + d*x)/2] + Sin
[(c + d*x)/2]) - 2*f*((c + d*x)*(Log[1 - E^(I*(c + d*x))] - Log[1 + E^(I*(c
 + d*x))]) + I*(PolyLog[2, -E^(I*(c + d*x))] - PolyLog[2, E^(I*(c + d*x))])
)*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) + d*(e + f*x)*Sin[(c + d*x)/2]*(1 +
 Tan[(c + d*x)/2])))/(2*a*d^2*(1 + Sin[c + d*x]))
```

fricas [B] time = 0.53, size = 858, normalized size = 5.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*d*f*x - 4*(d*f*x + d*e)*cos(d*x + c)^2 + 2*d*e - 2*(d*f*x + d*e)*co
s(d*x + c) + (-I*f*cos(d*x + c)^2 + (I*f*cos(d*x + c) + I*f)*sin(d*x + c) +
 I*f)*dilog(cos(d*x + c) + I*sin(d*x + c)) + (I*f*cos(d*x + c)^2 + (-I*f*co
s(d*x + c) - I*f)*sin(d*x + c) - I*f)*dilog(cos(d*x + c) - I*sin(d*x + c))
+ (-I*f*cos(d*x + c)^2 + (I*f*cos(d*x + c) + I*f)*sin(d*x + c) + I*f)*dilog
(-cos(d*x + c) + I*sin(d*x + c)) + (I*f*cos(d*x + c)^2 + (-I*f*cos(d*x + c)
 - I*f)*sin(d*x + c) - I*f)*dilog(-cos(d*x + c) - I*sin(d*x + c)) + (d*f*x
- (d*f*x + d*e + f)*cos(d*x + c)^2 + d*e + (d*f*x + d*e + (d*f*x + d*e + f)
*cos(d*x + c) + f)*sin(d*x + c) + f)*log(cos(d*x + c) + I*sin(d*x + c) + 1)
 + (d*f*x - (d*f*x + d*e + f)*cos(d*x + c)^2 + d*e + (d*f*x + d*e + (d*f*x
+ d*e + f)*cos(d*x + c) + f)*sin(d*x + c) + f)*log(cos(d*x + c) - I*sin(d*x
 + c) + 1) + ((d*e - (c + 1)*f)*cos(d*x + c)^2 - d*e + (c + 1)*f - (d*e - (
c + 1)*f + (d*e - (c + 1)*f)*cos(d*x + c))*sin(d*x + c))*log(-1/2*cos(d*x +
 c) + 1/2*I*sin(d*x + c) + 1/2) + ((d*e - (c + 1)*f)*cos(d*x + c)^2 - d*e +
 (c + 1)*f - (d*e - (c + 1)*f + (d*e - (c + 1)*f)*cos(d*x + c))*sin(d*x + c
))*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2) - (d*f*x - (d*f*x + c*
f)*cos(d*x + c)^2 + c*f + (d*f*x + c*f + (d*f*x + c*f)*cos(d*x + c))*sin(d*
x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + 1) - (d*f*x - (d*f*x + c*f)*co
s(d*x + c)^2 + c*f + (d*f*x + c*f + (d*f*x + c*f)*cos(d*x + c))*sin(d*x + c
))*log(-cos(d*x + c) - I*sin(d*x + c) + 1) - 2*(f*cos(d*x + c)^2 - (f*cos(d
*x + c) + f)*sin(d*x + c) - f)*log(sin(d*x + c) + 1) - 2*(d*f*x + d*e + 2*(
d*f*x + d*e)*cos(d*x + c))*sin(d*x + c))/(a*d^2*cos(d*x + c)^2 - a*d^2 - (a
*d^2*cos(d*x + c) + a*d^2)*sin(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\csc\left(dx+c\right)^2}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*csc(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.30, size = 351, normalized size = 2.08

$$-\frac{2\left(-2fx+i\mathrm{e}^{i(dx+c)}fx-2e+i\mathrm{e}^{i(dx+c)}e+fx\,\mathrm{e}^{2i(dx+c)}+e\,\mathrm{e}^{2i(dx+c)}\right)}{\left(\mathrm{e}^{2i(dx+c)}-1\right)\left(\mathrm{e}^{i(dx+c)}+i\right)da}+\frac{if\operatorname{polylog}\left(2,\mathrm{e}^{i(dx+c)}\right)}{a\,d^2}-\frac{if\operatorname{polylog}\left(2,-\mathrm{e}^{i(dx+}\right.}{a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csc(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] -2*(-2*f*x+I*exp(I*(d*x+c))*f*x-2*e+I*exp(I*(d*x+c))*e+f*x*exp(2*I*(d*x+c))
+e*exp(2*I*(d*x+c)))/(exp(2*I*(d*x+c))-1)/(exp(I*(d*x+c))+I)/d/a+I*f*polylo
```

```
g(2,exp(I*(d*x+c)))/a/d^2-I*f*polylog(2,-exp(I*(d*x+c)))/a/d^2+1/a/d*e*ln(e
xp(I*(d*x+c))+1)-1/a/d*e*ln(exp(I*(d*x+c))-1)+1/a/d^2*f*c*ln(exp(I*(d*x+c))
-1)+1/a/d*ln(exp(I*(d*x+c))+1)*f*x-1/a/d*ln(1-exp(I*(d*x+c)))*f*x-1/a/d^2*l
n(1-exp(I*(d*x+c)))*c*f+2/a/d^2*f*ln(exp(I*(d*x+c))+I)-4/a/d^2*f*ln(exp(I*(
d*x+c)))+1/a/d^2*f*ln(exp(I*(d*x+c))+1)+1/a/d^2*f*ln(exp(I*(d*x+c))-1)
```

maxima [B] time = 0.90, size = 1279, normalized size = 7.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")

[Out] -(8*d*f*x*cos(3*d*x + 3*c) + 8*I*d*f*x*sin(3*d*x + 3*c) + 8*I*d*e - (4*f*co
s(3*d*x + 3*c) + 4*I*f*cos(2*d*x + 2*c) - 4*f*cos(d*x + c) + 4*I*f*sin(3*d*
x + 3*c) - 4*f*sin(2*d*x + 2*c) - 4*I*f*sin(d*x + c) - 4*I*f)*arctan2(cos(c
) + sin(d*x), cos(d*x) + sin(c)) - (-2*I*d*f*x - 2*I*d*e + 2*(d*f*x + d*e +
 f)*cos(3*d*x + 3*c) + (2*I*d*f*x + 2*I*d*e + 2*I*f)*cos(2*d*x + 2*c) - 2*(
d*f*x + d*e + f)*cos(d*x + c) + (2*I*d*f*x + 2*I*d*e + 2*I*f)*sin(3*d*x + 3
*c) - 2*(d*f*x + d*e + f)*sin(2*d*x + 2*c) + (-2*I*d*f*x - 2*I*d*e - 2*I*f)
*sin(d*x + c) - 2*I*f)*arctan2(sin(d*x + c), cos(d*x + c) + 1) - (2*I*d*e -
 2*(d*e - f)*cos(3*d*x + 3*c) + (-2*I*d*e + 2*I*f)*cos(2*d*x + 2*c) + 2*(d*
e - f)*cos(d*x + c) + (-2*I*d*e + 2*I*f)*sin(3*d*x + 3*c) + 2*(d*e - f)*sin
(2*d*x + 2*c) + (2*I*d*e - 2*I*f)*sin(d*x + c) - 2*I*f)*arctan2(sin(d*x + c
), cos(d*x + c) - 1) - (2*d*f*x*cos(3*d*x + 3*c) + 2*I*d*f*x*cos(2*d*x + 2*
c) - 2*d*f*x*cos(d*x + c) + 2*I*d*f*x*sin(3*d*x + 3*c) - 2*d*f*x*sin(2*d*x
+ 2*c) - 2*I*d*f*x*sin(d*x + c) - 2*I*d*f*x)*arctan2(sin(d*x + c), -cos(d*x
 + c) + 1) - (-4*I*d*f*x + 4*I*d*e)*cos(2*d*x + 2*c) - 4*(d*f*x - d*e)*cos(
d*x + c) + (2*f*cos(3*d*x + 3*c) + 2*I*f*cos(2*d*x + 2*c) - 2*f*cos(d*x + c
) + 2*I*f*sin(3*d*x + 3*c) - 2*f*sin(2*d*x + 2*c) - 2*I*f*sin(d*x + c) - 2*
I*f)*dilog(-e^(I*d*x + I*c)) - (2*f*cos(3*d*x + 3*c) + 2*I*f*cos(2*d*x + 2*
c) - 2*f*cos(d*x + c) + 2*I*f*sin(3*d*x + 3*c) - 2*f*sin(2*d*x + 2*c) - 2*I
*f*sin(d*x + c) - 2*I*f)*dilog(e^(I*d*x + I*c)) + (d*f*x + d*e - (-I*d*f*x
- I*d*e - I*f)*cos(3*d*x + 3*c) - (d*f*x + d*e + f)*cos(2*d*x + 2*c) - (I*d
*f*x + I*d*e + I*f)*cos(d*x + c) - (d*f*x + d*e + f)*sin(3*d*x + 3*c) - (I*
d*f*x + I*d*e + I*f)*sin(2*d*x + 2*c) + (d*f*x + d*e + f)*sin(d*x + c) + f)
*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*cos(d*x + c) + 1) - (d*f*x + d*e +
 (I*d*f*x + I*d*e - I*f)*cos(3*d*x + 3*c) - (d*f*x + d*e - f)*cos(2*d*x + 2
*c) + (-I*d*f*x - I*d*e + I*f)*cos(d*x + c) - (d*f*x + d*e - f)*sin(3*d*x +
 3*c) + (-I*d*f*x - I*d*e + I*f)*sin(2*d*x + 2*c) + (d*f*x + d*e - f)*sin(d
*x + c) - f)*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*cos(d*x + c) + 1) - (-
2*I*f*cos(3*d*x + 3*c) + 2*f*cos(2*d*x + 2*c) + 2*I*f*cos(d*x + c) + 2*f*si
n(3*d*x + 3*c) + 2*I*f*sin(2*d*x + 2*c) - 2*f*sin(d*x + c) - 2*f)*log(cos(d
*x)^2 + cos(c)^2 + 2*cos(c)*sin(d*x) + sin(d*x)^2 + 2*cos(d*x)*sin(c) + sin
(c)^2) - 4*(d*f*x - d*e)*sin(2*d*x + 2*c) - (4*I*d*f*x - 4*I*d*e)*sin(d*x +
```

```
 c))/(-2*I*a*d^2*cos(3*d*x + 3*c) + 2*a*d^2*cos(2*d*x + 2*c) + 2*I*a*d^2*co
s(d*x + c) + 2*a*d^2*sin(3*d*x + 3*c) + 2*I*a*d^2*sin(2*d*x + 2*c) - 2*a*d^
2*sin(d*x + c) - 2*a*d^2)
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.01

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sin(c + d*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e \csc^2(c+dx)}{\sin(c+dx)+1}\, dx + \int \frac{f x \csc^2(c+dx)}{\sin(c+dx)+1}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e*csc(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(f*x*csc(c + d
*x)**2/(sin(c + d*x) + 1), x))/a
```

3.206 $\int \frac{\csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=51

$$-\frac{2\cot(c+dx)}{ad}+\frac{\tanh^{-1}(\cos(c+dx))}{ad}+\frac{\cot(c+dx)}{d(a\sin(c+dx)+a)}$$

```
[Out] arctanh(cos(d*x+c))/a/d-2*cot(d*x+c)/a/d+cot(d*x+c)/d/(a+a*sin(d*x+c))
```

Rubi [A] time = 0.08, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2768, 2748, 3767, 8, 3770}

$$-\frac{2\cot(c+dx)}{ad}+\frac{\tanh^{-1}(\cos(c+dx))}{ad}+\frac{\cot(c+dx)}{d(a\sin(c+dx)+a)}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[c + d*x]^2/(a + a*Sin[c + d*x]),x]
```

```
[Out] ArcTanh[Cos[c + d*x]]/(a*d) - (2*Cot[c + d*x])/(a*d) + Cot[c + d*x]/(d*(a +
 a*Sin[c + d*x]))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2748

```
Int[((b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*sin[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Sin[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Sin[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x]
```

Rule 2768

```
Int[((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)/((a_) + (b_.)*sin[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[(b^2*Cos[e + f*x]*(c + d*Sin[e + f*x])^(n
+ 1))/(a*f*(b*c - a*d)*(a + b*Sin[e + f*x])), x] + Dist[d/(a*(b*c - a*d)),
Int[(c + d*Sin[e + f*x])^n*(a*n - b*(n + 1)*Sin[e + f*x]), x], x] /; FreeQ[
{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2
 - d^2, 0] && LtQ[n, 0] && (IntegerQ[2*n] || EqQ[c, 0])
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\csc^2(c+dx)}{a+a\sin(c+dx)}\,dx &= \frac{\cot(c+dx)}{d(a+a\sin(c+dx))}-\frac{\int \csc^2(c+dx)(-2a+a\sin(c+dx))\,dx}{a^2}\\ &= \frac{\cot(c+dx)}{d(a+a\sin(c+dx))}-\frac{\int \csc(c+dx)\,dx}{a}+\frac{2\int \csc^2(c+dx)\,dx}{a}\\ &= \frac{\tanh^{-1}(\cos(c+dx))}{ad}+\frac{\cot(c+dx)}{d(a+a\sin(c+dx))}-\frac{2\,\text{Subst}\left(\int 1\,dx,x,\cot(c+dx)\right)}{ad}\\ &= \frac{\tanh^{-1}(\cos(c+dx))}{ad}-\frac{2\cot(c+dx)}{ad}+\frac{\cot(c+dx)}{d(a+a\sin(c+dx))}\end{aligned}$$

Mathematica [A] time = 0.20, size = 57, normalized size = 1.12

$$\frac{\sec(c+dx)\left(2\sin(c+dx)-\csc(c+dx)+\sqrt{\cos^2(c+dx)}\,\tanh^{-1}\left(\sqrt{\cos^2(c+dx)}\right)-1\right)}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[c + d*x]^2/(a + a*Sin[c + d*x]),x]
```

```
[Out] (Sec[c + d*x]*(-1 + ArcTanh[Sqrt[Cos[c + d*x]^2]]*Sqrt[Cos[c + d*x]^2] - Cs
c[c + d*x] + 2*Sin[c + d*x]))/(a*d)
```

fricas [B] time = 0.46, size = 156, normalized size = 3.06

$$\frac{4\cos(dx+c)^2+\left(\cos(dx+c)^2-(\cos(dx+c)+1)\sin(dx+c)-1\right)\log\left(\frac{1}{2}\cos(dx+c)+\frac{1}{2}\right)-\left(\cos(dx+c)^2-\right.}{2\left(ad\cos(dx+c)^2-ad-(a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(4*cos(d*x + c)^2 + (cos(d*x + c)^2 - (cos(d*x + c) + 1)*sin(d*x + c) -
 1)*log(1/2*cos(d*x + c) + 1/2) - (cos(d*x + c)^2 - (cos(d*x + c) + 1)*sin(
d*x + c) - 1)*log(-1/2*cos(d*x + c) + 1/2) + 2*(2*cos(d*x + c) + 1)*sin(d*x
 + c) + 2*cos(d*x + c) - 2)/(a*d*cos(d*x + c)^2 - a*d - (a*d*cos(d*x + c) +
 a*d)*sin(d*x + c))
```

giac [A] time = 0.38, size = 88, normalized size = 1.73

$$-\frac{\frac{2\log\left(\left|\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)\right|\right)}{a}-\frac{\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)}{a}-\frac{\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^{2}-4\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)-1}{\left(\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^{2}+\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)\right)a}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(2*log(abs(tan(1/2*d*x + 1/2*c)))/a - tan(1/2*d*x + 1/2*c)/a - (tan(1/
2*d*x + 1/2*c)^2 - 4*tan(1/2*d*x + 1/2*c) - 1)/((tan(1/2*d*x + 1/2*c)^2 + t
an(1/2*d*x + 1/2*c))*a))/d
```

maple [A] time = 0.10, size = 77, normalized size = 1.51

$$\frac{\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}{2ad}-\frac{1}{2ad\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{\ln\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{ad}-\frac{2}{ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] 1/2/a/d*tan(1/2*d*x+1/2*c)-1/2/a/d/tan(1/2*d*x+1/2*c)-1/a/d*ln(tan(1/2*d*x+
1/2*c))-2/a/d/(tan(1/2*d*x+1/2*c)+1)
```

maxima [B] time = 0.36, size = 112, normalized size = 2.20

$$-\frac{\frac{\frac{5\sin(dx+c)}{\cos(dx+c)+1}+1}{\frac{a\sin(dx+c)}{\cos(dx+c)+1}+\frac{a\sin(dx+c)^{2}}{(\cos(dx+c)+1)^{2}}}+\frac{2\log\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{a}-\frac{\sin(dx+c)}{a(\cos(dx+c)+1)}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*((5*sin(d*x + c)/(cos(d*x + c) + 1) + 1)/(a*sin(d*x + c)/(cos(d*x + c)
 + 1) + a*sin(d*x + c)^2/(cos(d*x + c) + 1)^2) + 2*log(sin(d*x + c)/(cos(d*
x + c) + 1))/a - sin(d*x + c)/(a*(cos(d*x + c) + 1)))/d
```

mupad [B]   time = 1.27, size = 83, normalized size = 1.63

$$\frac{\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{2\,a\,d}-\frac{\ln\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right)}{a\,d}-\frac{5\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+1}{d\left(2\,a\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^2+2\,a\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(c + d*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] tan(c/2 + (d*x)/2)/(2*a*d) - log(tan(c/2 + (d*x)/2))/(a*d) - (5*tan(c/2 + (
d*x)/2) + 1)/(d*(2*a*tan(c/2 + (d*x)/2) + 2*a*tan(c/2 + (d*x)/2)^2))
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int\frac{\csc^2(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)**2/(sin(c + d*x) + 1), x)/a
```

3.207 $\int \frac{\csc^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\csc^2(c+dx)}{(e+fx)(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(csc(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])),x]
[Out] Defer[Int][Csc[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\csc^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx = \int \frac{\csc^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 25.27, size = 0, normalized size = 0.00

$$\int \frac{\csc^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])),x]
[Out] Integrate[Csc[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\csc(dx+c)^2}{afx+ae+\left(afx+ae\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral(csc(d*x + c)^2/(a*f*x + a*e + (a*f*x + a*e)*sin(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [A] time = 4.75, size = 0, normalized size = 0.00

$$\int \frac{\csc^{2}\left(dx+c\right)}{\left(fx+e\right)\left(a+a\sin\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x)
[Out] int(csc(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sin\left(c+d\,x\right)^2\,\left(e+f\,x\right)\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(c + d*x)^2*(e + f*x)*(a + a*sin(c + d*x))),x)
[Out] int(1/(sin(c + d*x)^2*(e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\csc^{2}{\left(c+dx\right)}}{e\sin{\left(c+dx\right)}+e+fx\sin{\left(c+dx\right)}+fx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)**2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)**2/(e*sin(c + d*x) + e + f*x*sin(c + d*x) + f*x), x)/
a
```

3.208 $\int \frac{\csc^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\csc^2(c+dx)}{(e+fx)^2(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(csc(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
[Out] Defer[Int][Csc[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\csc^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx=\int \frac{\csc^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 49.36, size = 0, normalized size = 0.00

$$\int \frac{\csc^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
[Out] Integrate[Csc[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\csc(dx+c)^2}{af^2x^2+2\,aefx+ae^2+\left(af^2x^2+2\,aefx+ae^2\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(csc(d*x + c)^2/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2 + 2*a*e
*f*x + a*e^2)*sin(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 7.48, size = 0, normalized size = 0.00

$$\int \frac{\csc^2(dx+c)}{(fx+e)^2 (a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int(csc(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sin(c+d\,x)^2\,(e+f\,x)^2\,(a+a\,\sin(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(c + d*x)^2*(e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(1/(sin(c + d*x)^2*(e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\csc^2(c+dx)}{e^2\sin(c+dx)+e^2+2efx\sin(c+dx)+2efx+f^2x^2\sin(c+dx)+f^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)**2/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)**2/(e**2*sin(c + d*x) + e**2 + 2*e*f*x*sin(c + d*x) +
 2*e*f*x + f**2*x**2*sin(c + d*x) + f**2*x**2), x)/a
```

3.209 $\int \frac{(e+fx)^3\csc^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=600

$$\frac{3if^3\text{Li}_2\left(-e^{i(c+dx)}\right)}{ad^4}-\frac{3if^3\text{Li}_2\left(e^{i(c+dx)}\right)}{ad^4}-\frac{12f^3\text{Li}_3\left(ie^{i(c+dx)}\right)}{ad^4}-\frac{3f^3\text{Li}_3\left(e^{2i(c+dx)}\right)}{2ad^4}-\frac{9if^3\text{Li}_4\left(-e^{i(c+dx)}\right)}{ad^4}+\frac{9if^3\text{Li}_4\left(e^{i(c+a}\right.}{ad^4}$$

```
[Out] 3*I*f^2*(f*x+e)*polylog(2,exp(2*I*(d*x+c)))/a/d^3-6*f^2*(f*x+e)*arctanh(exp
(I*(d*x+c)))/a/d^3-3*(f*x+e)^3*arctanh(exp(I*(d*x+c)))/a/d+(f*x+e)^3*cot(1/
2*c+1/4*Pi+1/2*d*x)/a/d+(f*x+e)^3*cot(d*x+c)/a/d-3/2*f*(f*x+e)^2*csc(d*x+c)
/a/d^2-1/2*(f*x+e)^3*cot(d*x+c)*csc(d*x+c)/a/d-6*f*(f*x+e)^2*ln(1-I*exp(I*(
d*x+c)))/a/d^2-3*f*(f*x+e)^2*ln(1-exp(2*I*(d*x+c)))/a/d^2+2*I*(f*x+e)^3/a/d
-9/2*I*f*(f*x+e)^2*polylog(2,exp(I*(d*x+c)))/a/d^2+9/2*I*f*(f*x+e)^2*polylo
g(2,-exp(I*(d*x+c)))/a/d^2+9*I*f^3*polylog(4,exp(I*(d*x+c)))/a/d^4+12*I*f^2
*(f*x+e)*polylog(2,I*exp(I*(d*x+c)))/a/d^3-9*I*f^3*polylog(4,-exp(I*(d*x+c)
))/a/d^4-9*f^2*(f*x+e)*polylog(3,-exp(I*(d*x+c)))/a/d^3-12*f^3*polylog(3,I*
exp(I*(d*x+c)))/a/d^4+9*f^2*(f*x+e)*polylog(3,exp(I*(d*x+c)))/a/d^3-3/2*f^3
*polylog(3,exp(2*I*(d*x+c)))/a/d^4+3*I*f^3*polylog(2,-exp(I*(d*x+c)))/a/d^4
-3*I*f^3*polylog(2,exp(I*(d*x+c)))/a/d^4
```

Rubi [A] time = 1.11, antiderivative size = 600, normalized size of antiderivative = 1.00, number of steps used = 40, number of rules used = 13, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.464, Rules used = {4535, 4186, 4183, 2279, 2391, 2531, 6609, 2282, 6589, 4184, 3717, 2190, 3318}

$$\frac{12if^2(e+fx)\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}+\frac{3if^2(e+fx)\text{PolyLog}\left(2,e^{2i(c+dx)}\right)}{ad^3}-\frac{9f^2(e+fx)\text{PolyLog}\left(3,-e^{i(c+dx)}\right)}{ad^3}+\frac{9f^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csc[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((2*I)*(e + f*x)^3)/(a*d) - (6*f^2*(e + f*x)*ArcTanh[E^(I*(c + d*x))])/(a*d
^3) - (3*(e + f*x)^3*ArcTanh[E^(I*(c + d*x))])/(a*d) + ((e + f*x)^3*Cot[c/2
 + Pi/4 + (d*x)/2])/(a*d) + ((e + f*x)^3*Cot[c + d*x])/(a*d) - (3*f*(e + f*
x)^2*Csc[c + d*x])/(2*a*d^2) - ((e + f*x)^3*Cot[c + d*x]*Csc[c + d*x])/(2*a
*d) - (6*f*(e + f*x)^2*Log[1 - I*E^(I*(c + d*x))])/(a*d^2) - (3*f*(e + f*x)
^2*Log[1 - E^((2*I)*(c + d*x))])/(a*d^2) + ((3*I)*f^3*PolyLog[2, -E^(I*(c +
 d*x))])/(a*d^4) + (((9*I)/2)*f*(e + f*x)^2*PolyLog[2, -E^(I*(c + d*x))])/(
a*d^2) + ((12*I)*f^2*(e + f*x)*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^3) - ((3
*I)*f^3*PolyLog[2, E^(I*(c + d*x))])/(a*d^4) - (((9*I)/2)*f*(e + f*x)^2*Pol
yLog[2, E^(I*(c + d*x))])/(a*d^2) + ((3*I)*f^2*(e + f*x)*PolyLog[2, E^((2*I
)*(c + d*x))])/(a*d^3) - (9*f^2*(e + f*x)*PolyLog[3, -E^(I*(c + d*x))])/(a*
```

```
d^3) - (12*f^3*PolyLog[3, I*E^(I*(c + d*x))])/(a*d^4) + (9*f^2*(e + f*x)*Po
lyLog[3, E^(I*(c + d*x))])/(a*d^3) - (3*f^3*PolyLog[3, E^((2*I)*(c + d*x))]
)/(2*a*d^4) - ((9*I)*f^3*PolyLog[4, -E^(I*(c + d*x))])/(a*d^4) + ((9*I)*f^3
*PolyLog[4, E^(I*(c + d*x))])/(a*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
```

```
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\csc^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\csc^3(c+dx)\,dx}{a} - \int \frac{(e+fx)^3\csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{3f(e+fx)^2\csc(c+dx)}{2ad^2} - \frac{(e+fx)^3\cot(c+dx)\csc(c+dx)}{2ad} + \frac{\int (e+fx)^3\csc(c+}{2a}$$

$$= -\frac{6f^2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)^3\cot(c+dx}{ad}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx}{}$$

$$= \frac{i(e+fx)^3}{ad} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx}{}$$

$$= \frac{2i(e+fx)^3}{ad} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+f}{}$$

$$= \frac{2i(e+fx)^3}{ad} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+f}{}$$

$$= \frac{2i(e+fx)^3}{ad} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+f}{}$$

$$= \frac{2i(e+fx)^3}{ad} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+f}{}$$

$$= \frac{2i(e+fx)^3}{ad} - \frac{6f^2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+f}{}$$

Mathematica [B] time = 33.96, size = 1485, normalized size = 2.48

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csc[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (3*e^3*Log[Tan[(c + d*x)/2]])/(2*a*d) + (3*e*f^2*Log[Tan[(c + d*x)/2]])/(a*
d^3) + (9*e^2*f*((c + d*x)*(Log[1 - E^(I*(c + d*x))] - Log[1 + E^(I*(c + d*
x))]) - c*Log[Tan[(c + d*x)/2]] + I*(PolyLog[2, -E^(I*(c + d*x))] - PolyLog
[2, E^(I*(c + d*x))])))/(2*a*d^2) + (3*f^3*((c + d*x)*(Log[1 - E^(I*(c + d*
x))] - Log[1 + E^(I*(c + d*x))]) - c*Log[Tan[(c + d*x)/2]] + I*(PolyLog[2,
-E^(I*(c + d*x))] - PolyLog[2, E^(I*(c + d*x))])))/(a*d^4) + (E^(I*c)*f^3*C
sc[c]*((2*d^3*x^3)/E^((2*I)*c) + (3*I)*d^2*(1 - E^((-2*I)*c))*x^2*Log[1 - E
^((-I)*(c + d*x))] + (3*I)*d^2*(1 - E^((-2*I)*c))*x^2*Log[1 + E^((-I)*(c +
d*x))] - (6*(-1 + E^((2*I)*c))*(d*x*PolyLog[2, -E^((-I)*(c + d*x))] - I*Pol
yLog[3, -E^((-I)*(c + d*x))]))/E^((2*I)*c) - (6*(-1 + E^((2*I)*c))*(d*x*Pol
yLog[2, E^((-I)*(c + d*x))] - I*PolyLog[3, E^((-I)*(c + d*x))]))/E^((2*I)*c
)))/(2*a*d^4) - (9*e*f^2*(d^2*x^2*ArcTanh[Cos[c + d*x] + I*Sin[c + d*x]] -
I*d*x*PolyLog[2, -Cos[c + d*x] - I*Sin[c + d*x]] + I*d*x*PolyLog[2, Cos[c +
 d*x] + I*Sin[c + d*x]] + PolyLog[3, -Cos[c + d*x] - I*Sin[c + d*x]] - Poly
Log[3, Cos[c + d*x] + I*Sin[c + d*x]]))/(a*d^3) + (3*f^3*(-2*d^3*x^3*ArcTan
h[Cos[c + d*x] + I*Sin[c + d*x]] + (3*I)*d^2*x^2*PolyLog[2, -Cos[c + d*x] -
 I*Sin[c + d*x]] - (3*I)*d^2*x^2*PolyLog[2, Cos[c + d*x] + I*Sin[c + d*x]]
- 6*d*x*PolyLog[3, -Cos[c + d*x] - I*Sin[c + d*x]] + 6*d*x*PolyLog[3, Cos[c
 + d*x] + I*Sin[c + d*x]] - (6*I)*PolyLog[4, -Cos[c + d*x] - I*Sin[c + d*x]
] + (6*I)*PolyLog[4, Cos[c + d*x] + I*Sin[c + d*x]]))/(2*a*d^4) - (3*e^2*f*
Csc[c]*(-(d*x*Cos[c]) + Log[Cos[d*x]*Sin[c] + Cos[c]*Sin[d*x]]*Sin[c]))/(a*
d^2*(Cos[c]^2 + Sin[c]^2)) + (6*f*(Cos[c] + I*Sin[c])*(((e + f*x)^3*(Cos[c]
 - I*Sin[c]))/(3*f) - ((e + f*x)^2*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(
1 + I*Cos[c] + Sin[c]))/d + (2*f*(d*(e + f*x)*PolyLog[2, (-I)*Cos[c + d*x]
- Sin[c + d*x]] - I*f*PolyLog[3, (-I)*Cos[c + d*x] - Sin[c + d*x]])*(Cos[c]
 - I*(1 + Sin[c])))/d^3))/(a*d*(Cos[c] + I*(1 + Sin[c]))) + (Csc[c]*Csc[c +
 d*x]^2*(e^3*Sin[d*x] + 3*e^2*f*x*Sin[d*x] + 3*e*f^2*x^2*Sin[d*x] + f^3*x^3
*Sin[d*x]))/(2*a*d) + (Csc[c]*Csc[c + d*x]*(-(d*e^3*Cos[c]) - 3*d*e^2*f*x*C
os[c] - 3*d*e*f^2*x^2*Cos[c] - d*f^3*x^3*Cos[c] - 3*e^2*f*Sin[c] - 6*e*f^2*
x*Sin[c] - 3*f^3*x^2*Sin[c] - 2*d*e^3*Sin[d*x] - 6*d*e^2*f*x*Sin[d*x] - 6*d
*e*f^2*x^2*Sin[d*x] - 2*d*f^3*x^3*Sin[d*x]))/(2*a*d^2) - (2*(e^3*Sin[(d*x)/
2] + 3*e^2*f*x*Sin[(d*x)/2] + 3*e*f^2*x^2*Sin[(d*x)/2] + f^3*x^3*Sin[(d*x)/
2]))/(a*d*(Cos[c/2] + Sin[c/2])*(Cos[c/2 + (d*x)/2] + Sin[c/2 + (d*x)/2]))
+ (3*e*f^2*Csc[c]*Sec[c]*(d^2*E^(I*ArcTan[Tan[c]])*x^2 + ((I*d*x*(-Pi + 2*A
rcTan[Tan[c]]) - Pi*Log[1 + E^((-2*I)*d*x)] - 2*(d*x + ArcTan[Tan[c]])*Log[
1 - E^((2*I)*(d*x + ArcTan[Tan[c]]))] + Pi*Log[Cos[d*x]] + 2*ArcTan[Tan[c]]
*Log[Sin[d*x + ArcTan[Tan[c]]]] + I*PolyLog[2, E^((2*I)*(d*x + ArcTan[Tan[c
```

```
]]))])*Tan[c])/Sqrt[1 + Tan[c]^2]))/(a*d^3*Sqrt[Sec[c]^2*(Cos[c]^2 + Sin[c]
^2)])
```

fricas [C] time = 0.92, size = 7842, normalized size = 13.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(4*d^3*f^3*x^3 + 4*d^3*e^3 - 6*d^2*e^2*f - 8*(d^3*f^3*x^3 + 3*d^3*e*f^
2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*cos(d*x + c)^3 + 6*(2*d^3*e*f^2 - d^2*f^3)
*x^2 - 6*(d^3*f^3*x^3 + d^3*e^3 - d^2*e^2*f + (3*d^3*e*f^2 - d^2*f^3)*x^2 +
 (3*d^3*e^2*f - 2*d^2*e*f^2)*x)*cos(d*x + c)^2 + 12*(d^3*e^2*f - d^2*e*f^2)
*x + 6*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + d^3*e^3)*cos(d*x +
c) - (9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f - 12*I*d*e*f^2 + (-9*I*d^2*f^3*x^2 -
9*I*d^2*e^2*f + 12*I*d*e*f^2 - 6*I*f^3 - 6*I*(3*d^2*e*f^2 - 2*d*f^3)*x)*cos
(d*x + c)^3 + 6*I*f^3 + (-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f + 12*I*d*e*f^2 -
6*I*f^3 - 6*I*(3*d^2*e*f^2 - 2*d*f^3)*x)*cos(d*x + c)^2 + 6*I*(3*d^2*e*f^2
- 2*d*f^3)*x + (9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f - 12*I*d*e*f^2 + 6*I*f^3 +
6*I*(3*d^2*e*f^2 - 2*d*f^3)*x)*cos(d*x + c) + (9*I*d^2*f^3*x^2 + 9*I*d^2*e^
2*f - 12*I*d*e*f^2 + 6*I*f^3 + (-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f + 12*I*d*e
*f^2 - 6*I*f^3 - 6*I*(3*d^2*e*f^2 - 2*d*f^3)*x)*cos(d*x + c)^2 + 6*I*(3*d^2
*e*f^2 - 2*d*f^3)*x)*sin(d*x + c))*dilog(cos(d*x + c) + I*sin(d*x + c)) - (
-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f + 12*I*d*e*f^2 + (9*I*d^2*f^3*x^2 + 9*I*d^
2*e^2*f - 12*I*d*e*f^2 + 6*I*f^3 + 6*I*(3*d^2*e*f^2 - 2*d*f^3)*x)*cos(d*x +
 c)^3 - 6*I*f^3 + (9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f - 12*I*d*e*f^2 + 6*I*f^3
 + 6*I*(3*d^2*e*f^2 - 2*d*f^3)*x)*cos(d*x + c)^2 - 6*I*(3*d^2*e*f^2 - 2*d*f
^3)*x + (-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f + 12*I*d*e*f^2 - 6*I*f^3 - 6*I*(3
*d^2*e*f^2 - 2*d*f^3)*x)*cos(d*x + c) + (-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f +
 12*I*d*e*f^2 - 6*I*f^3 + (9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f - 12*I*d*e*f^2 +
 6*I*f^3 + 6*I*(3*d^2*e*f^2 - 2*d*f^3)*x)*cos(d*x + c)^2 - 6*I*(3*d^2*e*f^2
 - 2*d*f^3)*x)*sin(d*x + c))*dilog(cos(d*x + c) - I*sin(d*x + c)) - (-24*I*
d*f^3*x - 24*I*d*e*f^2 + (24*I*d*f^3*x + 24*I*d*e*f^2)*cos(d*x + c)^3 + (24
*I*d*f^3*x + 24*I*d*e*f^2)*cos(d*x + c)^2 + (-24*I*d*f^3*x - 24*I*d*e*f^2)*
cos(d*x + c) + (-24*I*d*f^3*x - 24*I*d*e*f^2 + (24*I*d*f^3*x + 24*I*d*e*f^2
)*cos(d*x + c)^2)*sin(d*x + c))*dilog(I*cos(d*x + c) - sin(d*x + c)) - (24*
I*d*f^3*x + 24*I*d*e*f^2 + (-24*I*d*f^3*x - 24*I*d*e*f^2)*cos(d*x + c)^3 +
(-24*I*d*f^3*x - 24*I*d*e*f^2)*cos(d*x + c)^2 + (24*I*d*f^3*x + 24*I*d*e*f^
2)*cos(d*x + c) + (24*I*d*f^3*x + 24*I*d*e*f^2 + (-24*I*d*f^3*x - 24*I*d*e*
f^2)*cos(d*x + c)^2)*sin(d*x + c))*dilog(-I*cos(d*x + c) - sin(d*x + c)) -
(9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f + 12*I*d*e*f^2 + (-9*I*d^2*f^3*x^2 - 9*I*d
^2*e^2*f - 12*I*d*e*f^2 - 6*I*f^3 - 6*I*(3*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x
+ c)^3 + 6*I*f^3 + (-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f - 12*I*d*e*f^2 - 6*I*f
^3 - 6*I*(3*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^2 + 6*I*(3*d^2*e*f^2 + 2*d
```

```
*f^3)*x + (9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f + 12*I*d*e*f^2 + 6*I*f^3 + 6*I*(
3*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c) + (9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f +
 12*I*d*e*f^2 + 6*I*f^3 + (-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f - 12*I*d*e*f^2
- 6*I*f^3 - 6*I*(3*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^2 + 6*I*(3*d^2*e*f^
2 + 2*d*f^3)*x)*sin(d*x + c))*dilog(-cos(d*x + c) + I*sin(d*x + c)) - (-9*I
*d^2*f^3*x^2 - 9*I*d^2*e^2*f - 12*I*d*e*f^2 + (9*I*d^2*f^3*x^2 + 9*I*d^2*e^
2*f + 12*I*d*e*f^2 + 6*I*f^3 + 6*I*(3*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^
3 - 6*I*f^3 + (9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f + 12*I*d*e*f^2 + 6*I*f^3 + 6
*I*(3*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^2 - 6*I*(3*d^2*e*f^2 + 2*d*f^3)*
x + (-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f - 12*I*d*e*f^2 - 6*I*f^3 - 6*I*(3*d^2
*e*f^2 + 2*d*f^3)*x)*cos(d*x + c) + (-9*I*d^2*f^3*x^2 - 9*I*d^2*e^2*f - 12*
I*d*e*f^2 - 6*I*f^3 + (9*I*d^2*f^3*x^2 + 9*I*d^2*e^2*f + 12*I*d*e*f^2 + 6*I
*f^3 + 6*I*(3*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^2 - 6*I*(3*d^2*e*f^2 + 2
*d*f^3)*x)*sin(d*x + c))*dilog(-cos(d*x + c) - I*sin(d*x + c)) - 3*(d^3*f^3
*x^3 + d^3*e^3 + 2*d^2*e^2*f + 2*d*e*f^2 - (d^3*f^3*x^3 + d^3*e^3 + 2*d^2*e
^2*f + 2*d*e*f^2 + (3*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (3*d^3*e^2*f + 4*d^2*e*f
^2 + 2*d*f^3)*x)*cos(d*x + c)^3 + (3*d^3*e*f^2 + 2*d^2*f^3)*x^2 - (d^3*f^3*
x^3 + d^3*e^3 + 2*d^2*e^2*f + 2*d*e*f^2 + (3*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (
3*d^3*e^2*f + 4*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^2 + (3*d^3*e^2*f + 4*d
^2*e*f^2 + 2*d*f^3)*x + (d^3*f^3*x^3 + d^3*e^3 + 2*d^2*e^2*f + 2*d*e*f^2 +
(3*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (3*d^3*e^2*f + 4*d^2*e*f^2 + 2*d*f^3)*x)*co
s(d*x + c) + (d^3*f^3*x^3 + d^3*e^3 + 2*d^2*e^2*f + 2*d*e*f^2 + (3*d^3*e*f^
2 + 2*d^2*f^3)*x^2 - (d^3*f^3*x^3 + d^3*e^3 + 2*d^2*e^2*f + 2*d*e*f^2 + (3*
d^3*e*f^2 + 2*d^2*f^3)*x^2 + (3*d^3*e^2*f + 4*d^2*e*f^2 + 2*d*f^3)*x)*cos(d
*x + c)^2 + (3*d^3*e^2*f + 4*d^2*e*f^2 + 2*d*f^3)*x)*sin(d*x + c))*log(cos(
d*x + c) + I*sin(d*x + c) + 1) - 12*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3 - (d
^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c)^3 - (d^2*e^2*f - 2*c*d*e*f^2
 + c^2*f^3)*cos(d*x + c)^2 + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x +
c) + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3 - (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^
3)*cos(d*x + c)^2)*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c) + I) - 3
*(d^3*f^3*x^3 + d^3*e^3 + 2*d^2*e^2*f + 2*d*e*f^2 - (d^3*f^3*x^3 + d^3*e^3
+ 2*d^2*e^2*f + 2*d*e*f^2 + (3*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (3*d^3*e^2*f +
4*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^3 + (3*d^3*e*f^2 + 2*d^2*f^3)*x^2 -
(d^3*f^3*x^3 + d^3*e^3 + 2*d^2*e^2*f + 2*d*e*f^2 + (3*d^3*e*f^2 + 2*d^2*f^3
)*x^2 + (3*d^3*e^2*f + 4*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^2 + (3*d^3*e^
2*f + 4*d^2*e*f^2 + 2*d*f^3)*x + (d^3*f^3*x^3 + d^3*e^3 + 2*d^2*e^2*f + 2*d
*e*f^2 + (3*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (3*d^3*e^2*f + 4*d^2*e*f^2 + 2*d*f
^3)*x)*cos(d*x + c) + (d^3*f^3*x^3 + d^3*e^3 + 2*d^2*e^2*f + 2*d*e*f^2 + (3
*d^3*e*f^2 + 2*d^2*f^3)*x^2 - (d^3*f^3*x^3 + d^3*e^3 + 2*d^2*e^2*f + 2*d*e*
f^2 + (3*d^3*e*f^2 + 2*d^2*f^3)*x^2 + (3*d^3*e^2*f + 4*d^2*e*f^2 + 2*d*f^3)
*x)*cos(d*x + c)^2 + (3*d^3*e^2*f + 4*d^2*e*f^2 + 2*d*f^3)*x)*sin(d*x + c))
*log(cos(d*x + c) - I*sin(d*x + c) + 1) - 12*(d^2*f^3*x^2 + 2*d^2*e*f^2*x +
 2*c*d*e*f^2 - c^2*f^3 - (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f
^3)*cos(d*x + c)^3 - (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*
cos(d*x + c)^2 + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(
```

d*x + c) + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3 - (d^2*f^3*
x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c)^2)*sin(d*x + c))*
log(I*cos(d*x + c) + sin(d*x + c) + 1) - 12*(d^2*f^3*x^2 + 2*d^2*e*f^2*x +
2*c*d*e*f^2 - c^2*f^3 - (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^
3)*cos(d*x + c)^3 - (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*c
os(d*x + c)^2 + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d
*x + c) + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3 - (d^2*f^3*x
^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c)^2)*sin(d*x + c))*l
og(-I*cos(d*x + c) + sin(d*x + c) + 1) + 3*(d^3*e^3 - (3*c + 2)*d^2*e^2*f +
(3*c^2 + 4*c + 2)*d*e*f^2 - (c^3 + 2*c^2 + 2*c)*f^3 - (d^3*e^3 - (3*c + 2)
*d^2*e^2*f + (3*c^2 + 4*c + 2)*d*e*f^2 - (c^3 + 2*c^2 + 2*c)*f^3)*cos(d*x +
c)^3 - (d^3*e^3 - (3*c + 2)*d^2*e^2*f + (3*c^2 + 4*c + 2)*d*e*f^2 - (c^3 +
2*c^2 + 2*c)*f^3)*cos(d*x + c)^2 + (d^3*e^3 - (3*c + 2)*d^2*e^2*f + (3*c^2
+ 4*c + 2)*d*e*f^2 - (c^3 + 2*c^2 + 2*c)*f^3)*cos(d*x + c) + (d^3*e^3 - (3
*c + 2)*d^2*e^2*f + (3*c^2 + 4*c + 2)*d*e*f^2 - (c^3 + 2*c^2 + 2*c)*f^3 - (
d^3*e^3 - (3*c + 2)*d^2*e^2*f + (3*c^2 + 4*c + 2)*d*e*f^2 - (c^3 + 2*c^2 +
2*c)*f^3)*cos(d*x + c)^2)*sin(d*x + c))*log(-1/2*cos(d*x + c) + 1/2*I*sin(d
x + c) + 1/2) + 3(d^3*e^3 - (3*c + 2)*d^2*e^2*f + (3*c^2 + 4*c + 2)*d*e*f
^2 - (c^3 + 2*c^2 + 2*c)*f^3 - (d^3*e^3 - (3*c + 2)*d^2*e^2*f + (3*c^2 + 4*
c + 2)*d*e*f^2 - (c^3 + 2*c^2 + 2*c)*f^3)*cos(d*x + c)^3 - (d^3*e^3 - (3*c
+ 2)*d^2*e^2*f + (3*c^2 + 4*c + 2)*d*e*f^2 - (c^3 + 2*c^2 + 2*c)*f^3)*cos(d
*x + c)^2 + (d^3*e^3 - (3*c + 2)*d^2*e^2*f + (3*c^2 + 4*c + 2)*d*e*f^2 - (c
^3 + 2*c^2 + 2*c)*f^3)*cos(d*x + c) + (d^3*e^3 - (3*c + 2)*d^2*e^2*f + (3*c
^2 + 4*c + 2)*d*e*f^2 - (c^3 + 2*c^2 + 2*c)*f^3 - (d^3*e^3 - (3*c + 2)*d^2*
e^2*f + (3*c^2 + 4*c + 2)*d*e*f^2 - (c^3 + 2*c^2 + 2*c)*f^3)*cos(d*x + c)^2
)*sin(d*x + c))*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2) + 3*(d^3*
f^3*x^3 + 3*c*d^2*e^2*f - (3*c^2 + 4*c)*d*e*f^2 + (c^3 + 2*c^2 + 2*c)*f^3 -
(d^3*f^3*x^3 + 3*c*d^2*e^2*f - (3*c^2 + 4*c)*d*e*f^2 + (c^3 + 2*c^2 + 2*c)
*f^3 + (3*d^3*e*f^2 - 2*d^2*f^3)*x^2 + (3*d^3*e^2*f - 4*d^2*e*f^2 + 2*d*f^3
)*x)*cos(d*x + c)^3 + (3*d^3*e*f^2 - 2*d^2*f^3)*x^2 - (d^3*f^3*x^3 + 3*c*d^
2*e^2*f - (3*c^2 + 4*c)*d*e*f^2 + (c^3 + 2*c^2 + 2*c)*f^3 + (3*d^3*e*f^2 -
2*d^2*f^3)*x^2 + (3*d^3*e^2*f - 4*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^2 +
(3*d^3*e^2*f - 4*d^2*e*f^2 + 2*d*f^3)*x + (d^3*f^3*x^3 + 3*c*d^2*e^2*f - (3
*c^2 + 4*c)*d*e*f^2 + (c^3 + 2*c^2 + 2*c)*f^3 + (3*d^3*e*f^2 - 2*d^2*f^3)*x
^2 + (3*d^3*e^2*f - 4*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c) + (d^3*f^3*x^3 +
3*c*d^2*e^2*f - (3*c^2 + 4*c)*d*e*f^2 + (c^3 + 2*c^2 + 2*c)*f^3 + (3*d^3*e
*f^2 - 2*d^2*f^3)*x^2 - (d^3*f^3*x^3 + 3*c*d^2*e^2*f - (3*c^2 + 4*c)*d*e*f^
2 + (c^3 + 2*c^2 + 2*c)*f^3 + (3*d^3*e*f^2 - 2*d^2*f^3)*x^2 + (3*d^3*e^2*f
- 4*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^2 + (3*d^3*e^2*f - 4*d^2*e*f^2 + 2
*d*f^3)*x)*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + 1) - 12*(d^2*
e^2*f - 2*c*d*e*f^2 + c^2*f^3 - (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x
+ c)^3 - (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c)^2 + (d^2*e^2*f -
2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c) + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3 -
(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c)^2)*sin(d*x + c))*log(-cos
(d*x + c) + I*sin(d*x + c) + I) + 3*(d^3*f^3*x^3 + 3*c*d^2*e^2*f - (3*c^2 +

```
4*c)*d*e*f^2 + (c^3 + 2*c^2 + 2*c)*f^3 - (d^3*f^3*x^3 + 3*c*d^2*e^2*f - (3
*c^2 + 4*c)*d*e*f^2 + (c^3 + 2*c^2 + 2*c)*f^3 + (3*d^3*e*f^2 - 2*d^2*f^3)*x
^2 + (3*d^3*e^2*f - 4*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^3 + (3*d^3*e*f^2
 - 2*d^2*f^3)*x^2 - (d^3*f^3*x^3 + 3*c*d^2*e^2*f - (3*c^2 + 4*c)*d*e*f^2 +
(c^3 + 2*c^2 + 2*c)*f^3 + (3*d^3*e*f^2 - 2*d^2*f^3)*x^2 + (3*d^3*e^2*f - 4*
d^2*e*f^2 + 2*d*f^3)*x)*cos(d*x + c)^2 + (3*d^3*e^2*f - 4*d^2*e*f^2 + 2*d*f
^3)*x + (d^3*f^3*x^3 + 3*c*d^2*e^2*f - (3*c^2 + 4*c)*d*e*f^2 + (c^3 + 2*c^2
 + 2*c)*f^3 + (3*d^3*e*f^2 - 2*d^2*f^3)*x^2 + (3*d^3*e^2*f - 4*d^2*e*f^2 +
2*d*f^3)*x)*cos(d*x + c) + (d^3*f^3*x^3 + 3*c*d^2*e^2*f - (3*c^2 + 4*c)*d*e
*f^2 + (c^3 + 2*c^2 + 2*c)*f^3 + (3*d^3*e*f^2 - 2*d^2*f^3)*x^2 - (d^3*f^3*x
^3 + 3*c*d^2*e^2*f - (3*c^2 + 4*c)*d*e*f^2 + (c^3 + 2*c^2 + 2*c)*f^3 + (3*d
^3*e*f^2 - 2*d^2*f^3)*x^2 + (3*d^3*e^2*f - 4*d^2*e*f^2 + 2*d*f^3)*x)*cos(d*
x + c)^2 + (3*d^3*e^2*f - 4*d^2*e*f^2 + 2*d*f^3)*x)*sin(d*x + c))*log(-cos(
d*x + c) - I*sin(d*x + c) + 1) - (18*I*f^3*cos(d*x + c)^3 + 18*I*f^3*cos(d*
x + c)^2 - 18*I*f^3*cos(d*x + c) - 18*I*f^3 + (18*I*f^3*cos(d*x + c)^2 - 18
*I*f^3)*sin(d*x + c))*polylog(4, cos(d*x + c) + I*sin(d*x + c)) - (-18*I*f^
3*cos(d*x + c)^3 - 18*I*f^3*cos(d*x + c)^2 + 18*I*f^3*cos(d*x + c) + 18*I*f
^3 + (-18*I*f^3*cos(d*x + c)^2 + 18*I*f^3)*sin(d*x + c))*polylog(4, cos(d*x
 + c) - I*sin(d*x + c)) - (18*I*f^3*cos(d*x + c)^3 + 18*I*f^3*cos(d*x + c)^
2 - 18*I*f^3*cos(d*x + c) - 18*I*f^3 + (18*I*f^3*cos(d*x + c)^2 - 18*I*f^3)
*sin(d*x + c))*polylog(4, -cos(d*x + c) + I*sin(d*x + c)) - (-18*I*f^3*cos(
d*x + c)^3 - 18*I*f^3*cos(d*x + c)^2 + 18*I*f^3*cos(d*x + c) + 18*I*f^3 + (
-18*I*f^3*cos(d*x + c)^2 + 18*I*f^3)*sin(d*x + c))*polylog(4, -cos(d*x + c)
 - I*sin(d*x + c)) + 6*(3*d*f^3*x + 3*d*e*f^2 - (3*d*f^3*x + 3*d*e*f^2 - 2*
f^3)*cos(d*x + c)^3 - 2*f^3 - (3*d*f^3*x + 3*d*e*f^2 - 2*f^3)*cos(d*x + c)^
2 + (3*d*f^3*x + 3*d*e*f^2 - 2*f^3)*cos(d*x + c) + (3*d*f^3*x + 3*d*e*f^2 -
 2*f^3 - (3*d*f^3*x + 3*d*e*f^2 - 2*f^3)*cos(d*x + c)^2)*sin(d*x + c))*poly
log(3, cos(d*x + c) + I*sin(d*x + c)) + 6*(3*d*f^3*x + 3*d*e*f^2 - (3*d*f^3
*x + 3*d*e*f^2 - 2*f^3)*cos(d*x + c)^3 - 2*f^3 - (3*d*f^3*x + 3*d*e*f^2 - 2
*f^3)*cos(d*x + c)^2 + (3*d*f^3*x + 3*d*e*f^2 - 2*f^3)*cos(d*x + c) + (3*d*
f^3*x + 3*d*e*f^2 - 2*f^3 - (3*d*f^3*x + 3*d*e*f^2 - 2*f^3)*cos(d*x + c)^2)
*sin(d*x + c))*polylog(3, cos(d*x + c) - I*sin(d*x + c)) + 24*(f^3*cos(d*x
+ c)^3 + f^3*cos(d*x + c)^2 - f^3*cos(d*x + c) - f^3 + (f^3*cos(d*x + c)^2
- f^3)*sin(d*x + c))*polylog(3, I*cos(d*x + c) - sin(d*x + c)) + 24*(f^3*co
s(d*x + c)^3 + f^3*cos(d*x + c)^2 - f^3*cos(d*x + c) - f^3 + (f^3*cos(d*x +
 c)^2 - f^3)*sin(d*x + c))*polylog(3, -I*cos(d*x + c) - sin(d*x + c)) - 6*(
3*d*f^3*x + 3*d*e*f^2 - (3*d*f^3*x + 3*d*e*f^2 + 2*f^3)*cos(d*x + c)^3 + 2*
f^3 - (3*d*f^3*x + 3*d*e*f^2 + 2*f^3)*cos(d*x + c)^2 + (3*d*f^3*x + 3*d*e*f
^2 + 2*f^3)*cos(d*x + c) + (3*d*f^3*x + 3*d*e*f^2 + 2*f^3 - (3*d*f^3*x + 3*
d*e*f^2 + 2*f^3)*cos(d*x + c)^2)*sin(d*x + c))*polylog(3, -cos(d*x + c) + I
*sin(d*x + c)) - 6*(3*d*f^3*x + 3*d*e*f^2 - (3*d*f^3*x + 3*d*e*f^2 + 2*f^3)
*cos(d*x + c)^3 + 2*f^3 - (3*d*f^3*x + 3*d*e*f^2 + 2*f^3)*cos(d*x + c)^2 +
(3*d*f^3*x + 3*d*e*f^2 + 2*f^3)*cos(d*x + c) + (3*d*f^3*x + 3*d*e*f^2 + 2*f
^3 - (3*d*f^3*x + 3*d*e*f^2 + 2*f^3)*cos(d*x + c)^2)*sin(d*x + c))*polylog(
3, -cos(d*x + c) - I*sin(d*x + c)) - 2*(2*d^3*f^3*x^3 + 2*d^3*e^3 + 3*d^2*e
```

```
^2*f + 3*(2*d^3*e*f^2 + d^2*f^3)*x^2 - 4*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3
*d^3*e^2*f*x + d^3*e^3)*cos(d*x + c)^2 + 6*(d^3*e^2*f + d^2*e*f^2)*x - (d^3
*f^3*x^3 + d^3*e^3 - 3*d^2*e^2*f + 3*(d^3*e*f^2 - d^2*f^3)*x^2 + 3*(d^3*e^2
*f - 2*d^2*e*f^2)*x)*cos(d*x + c))*sin(d*x + c))/(a*d^4*cos(d*x + c)^3 + a*
d^4*cos(d*x + c)^2 - a*d^4*cos(d*x + c) - a*d^4 + (a*d^4*cos(d*x + c)^2 - a
*d^4)*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.44, size = 2257, normalized size = 3.76

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csc(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] -12/a/d^2*f^2*e*ln(1-I*exp(I*(d*x+c)))*x-12/a/d^3*f^2*e*ln(1-I*exp(I*(d*x+c
)))*c-24/a/d^3*f^2*e*c*ln(exp(I*(d*x+c)))+9*I/a/d^2*polylog(2,-exp(I*(d*x+c
)))*e*f^2*x-9*I/a/d^2*polylog(2,exp(I*(d*x+c)))*e*f^2*x+24*I/a/d^2*c*e*f^2*
x+12*I/a/d^3*f^2*e*polylog(2,I*exp(I*(d*x+c)))+6/a/d^3*e*f^2*c*ln(exp(I*(d*
x+c))-1)+(-3*I*f^3*x^2*exp(4*I*(d*x+c))-3*I*e^2*f*exp(4*I*(d*x+c))-5*d*f^3*
x^3*exp(2*I*(d*x+c))+3*I*e^2*f*exp(2*I*(d*x+c))+3*I*f^3*x^2*exp(2*I*(d*x+c)
)-I*d*e^3*exp(I*(d*x+c))+4*d*f^3*x^3+12*d*e*f^2*x^2+12*d*e^2*f*x-3*f^3*x^2*
exp(I*(d*x+c))-3*exp(I*(d*x+c))*e^2*f+4*d*e^3-3*I*d*e*f^2*x^2*exp(I*(d*x+c)
)-3*I*d*e^2*f*x*exp(I*(d*x+c))-5*d*e^3*exp(2*I*(d*x+c))+3*d*e^3*exp(4*I*(d*
x+c))+3*f^3*x^2*exp(3*I*(d*x+c))+3*e^2*f*exp(3*I*(d*x+c))+6*e*f^2*x*exp(3*I
*(d*x+c))+3*d*f^3*x^3*exp(4*I*(d*x+c))+3*I*d*e^3*exp(3*I*(d*x+c))-6*e*f^2*x
*exp(I*(d*x+c))-15*d*e^2*f*x*exp(2*I*(d*x+c))+6*I*e*f^2*x*exp(2*I*(d*x+c))+
9*d*e*f^2*x^2*exp(4*I*(d*x+c))+9*d*e^2*f*x*exp(4*I*(d*x+c))+3*I*d*f^3*x^3*e
xp(3*I*(d*x+c))-I*d*f^3*x^3*exp(I*(d*x+c))-15*d*e*f^2*x^2*exp(2*I*(d*x+c))+
9*I*d*e*f^2*x^2*exp(3*I*(d*x+c))+9*I*d*e^2*f*x*exp(3*I*(d*x+c))-6*I*e*f^2*x
*exp(4*I*(d*x+c)))/(exp(2*I*(d*x+c))-1)^2/d^2/(exp(I*(d*x+c))+I)/a-3/a/d^2*
f^3*ln(exp(I*(d*x+c))+1)*x^2-3/a/d^2*f^3*ln(1-exp(I*(d*x+c)))*x^2+3/a/d^4*f
^3*ln(1-exp(I*(d*x+c)))*c^2-3/a/d^2*e^2*f*ln(exp(I*(d*x+c))+1)-3/a/d^2*e^2*
f*ln(exp(I*(d*x+c))-1)-3/a/d^4*f^3*c^2*ln(exp(I*(d*x+c))-1)+12/a/d^2*f*ln(e
xp(I*(d*x+c)))*e^2+12/a/d^4*f^3*c^2*ln(exp(I*(d*x+c)))-6/a/d^4*f^3*c^2*ln(e
xp(I*(d*x+c))+I)-6/a/d^2*f*ln(exp(I*(d*x+c))+I)*e^2+3/2/a/d*e^3*ln(exp(I*(d
```

```
*x+c))-1)-3/2/a/d*e^3*ln(exp(I*(d*x+c))+1)-3/a/d^3*f^3*ln(exp(I*(d*x+c))+1)
*x+3/a/d^3*f^3*ln(1-exp(I*(d*x+c)))*x+3/a/d^4*f^3*ln(1-exp(I*(d*x+c)))*c+4*
I/a/d*f^3*x^3-8*I/a/d^4*f^3*c^3-6/a/d^2*f^3*ln(1-I*exp(I*(d*x+c)))*x^2+3/a/
d^3*e*f^2*ln(exp(I*(d*x+c))-1)-3/a/d^3*e*f^2*ln(exp(I*(d*x+c))+1)-3/a/d^4*f
^3*c*ln(exp(I*(d*x+c))-1)-6/a/d^2*e*f^2*ln(1-exp(I*(d*x+c)))*x-6/a/d^3*e*f^
2*ln(1-exp(I*(d*x+c)))*c-6/a/d^2*e*f^2*ln(exp(I*(d*x+c))+1)*x-6*f^3*polylog
(3,-exp(I*(d*x+c)))/a/d^4-6*f^3*polylog(3,exp(I*(d*x+c)))/a/d^4-12*f^3*poly
log(3,I*exp(I*(d*x+c)))/a/d^4+9*I*f^3*polylog(4,exp(I*(d*x+c)))/a/d^4+3*I*f
^3*polylog(2,-exp(I*(d*x+c)))/a/d^4-3*I*f^3*polylog(2,exp(I*(d*x+c)))/a/d^4
-9*I*f^3*polylog(4,-exp(I*(d*x+c)))/a/d^4-3/2/a/d^4*f^3*c^3*ln(exp(I*(d*x+c
))-1)+9/a/d^3*e*f^2*polylog(3,exp(I*(d*x+c)))-9/a/d^3*e*f^2*polylog(3,-exp(
I*(d*x+c)))+9/a/d^3*f^3*polylog(3,exp(I*(d*x+c)))*x-9/a/d^3*f^3*polylog(3,-
exp(I*(d*x+c)))*x+6/a/d^4*f^3*ln(1-I*exp(I*(d*x+c)))*c^2-3/2/a/d*f^3*ln(exp
(I*(d*x+c))+1)*x^3+3/2/a/d*f^3*ln(1-exp(I*(d*x+c)))*x^3+3/2/a/d^4*f^3*ln(1-
exp(I*(d*x+c)))*c^3+9/2/a/d^3*e*f^2*c^2*ln(exp(I*(d*x+c))-1)+12/a/d^3*f^2*e
*c*ln(exp(I*(d*x+c))+I)+12*I/a/d^3*f^3*polylog(2,I*exp(I*(d*x+c)))*x-9/2/a/
d*e*f^2*ln(exp(I*(d*x+c))+1)*x^2+9/2/a/d*e*f^2*ln(1-exp(I*(d*x+c)))*x^2+9/2
/a/d*ln(1-exp(I*(d*x+c)))*e^2*f*x-9/2/a/d*ln(exp(I*(d*x+c))+1)*e^2*f*x-9/2/
a/d^3*e*f^2*c^2*ln(1-exp(I*(d*x+c)))+9/2/a/d^2*ln(1-exp(I*(d*x+c)))*c*e^2*f
-9/2/a/d^2*e^2*f*c*ln(exp(I*(d*x+c))-1)+12*I/a/d*e*f^2*x^2-9/2*I/a/d^2*e^2*
f*polylog(2,exp(I*(d*x+c)))+9/2*I/a/d^2*e^2*f*polylog(2,-exp(I*(d*x+c)))-12
*I/a/d^3*f^3*c^2*x+12*I/a/d^3*c^2*e*f^2+6*I/a/d^3*e*f^2*polylog(2,exp(I*(d*
x+c)))+6*I/a/d^3*e*f^2*polylog(2,-exp(I*(d*x+c)))-9/2*I/a/d^2*f^3*polylog(2
,exp(I*(d*x+c)))*x^2+9/2*I/a/d^2*f^3*polylog(2,-exp(I*(d*x+c)))*x^2+6*I/a/d
^3*f^3*polylog(2,-exp(I*(d*x+c)))*x+6*I/a/d^3*f^3*polylog(2,exp(I*(d*x+c)))
*x
```

maxima [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] Timed out
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sin(c + d*x)^3*(a + a*sin(c + d*x))),x)
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^3 \csc^3(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{f^3x^3 \csc^3(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{3ef^2x^2 \csc^3(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{3e^2fx \csc^3(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csc(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**3*csc(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(f**3*x**3*
csc(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(3*e*f**2*x**2*csc(c + d*x
)**3/(sin(c + d*x) + 1), x) + Integral(3*e**2*f*x*csc(c + d*x)**3/(sin(c +
d*x) + 1), x))/a
```

3.210 $\int \frac{(e+fx)^2 \csc^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=392

$$\frac{4if^2\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^3}+\frac{if^2\text{Li}_2\left(e^{2i(c+dx)}\right)}{ad^3}-\frac{3f^2\text{Li}_3\left(-e^{i(c+dx)}\right)}{ad^3}+\frac{3f^2\text{Li}_3\left(e^{i(c+dx)}\right)}{ad^3}-\frac{f^2\tanh^{-1}(\cos(c+dx))}{ad^3}+\frac{3if(e+fx}{}$$

```
[Out] 2*I*(f*x+e)^2/a/d-3*(f*x+e)^2*arctanh(exp(I*(d*x+c)))/a/d-f^2*arctanh(cos(d
*x+c))/a/d^3+(f*x+e)^2*cot(1/2*c+1/4*Pi+1/2*d*x)/a/d+(f*x+e)^2*cot(d*x+c)/a
/d-f*(f*x+e)*csc(d*x+c)/a/d^2-1/2*(f*x+e)^2*cot(d*x+c)*csc(d*x+c)/a/d-4*f*(
f*x+e)*ln(1-I*exp(I*(d*x+c)))/a/d^2-2*f*(f*x+e)*ln(1-exp(2*I*(d*x+c)))/a/d^
2+3*I*f*(f*x+e)*polylog(2,-exp(I*(d*x+c)))/a/d^2+4*I*f^2*polylog(2,I*exp(I*
(d*x+c)))/a/d^3-3*I*f*(f*x+e)*polylog(2,exp(I*(d*x+c)))/a/d^2+I*f^2*polylog
(2,exp(2*I*(d*x+c)))/a/d^3-3*f^2*polylog(3,-exp(I*(d*x+c)))/a/d^3+3*f^2*pol
ylog(3,exp(I*(d*x+c)))/a/d^3
```

Rubi [A] time = 0.72, antiderivative size = 392, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 13, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.464, Rules used = {4535, 4186, 3770, 4183, 2531, 2282, 6589, 4184, 3717, 2190, 2279, 2391, 3318}

$$\frac{3if(e+fx)\text{PolyLog}\left(2,-e^{i(c+dx)}\right)}{ad^2}-\frac{3if(e+fx)\text{PolyLog}\left(2,e^{i(c+dx)}\right)}{ad^2}+\frac{4if^2\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}+\frac{if^2\text{PolyLog}\left(2\right.}{ad^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csc[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((2*I)*(e + f*x)^2)/(a*d) - (3*(e + f*x)^2*ArcTanh[E^(I*(c + d*x))])/(a*d)
- (f^2*ArcTanh[Cos[c + d*x]])/(a*d^3) + ((e + f*x)^2*Cot[c/2 + Pi/4 + (d*x)
/2])/(a*d) + ((e + f*x)^2*Cot[c + d*x])/(a*d) - (f*(e + f*x)*Csc[c + d*x])/
(a*d^2) - ((e + f*x)^2*Cot[c + d*x]*Csc[c + d*x])/(2*a*d) - (4*f*(e + f*x)*
Log[1 - I*E^(I*(c + d*x))])/(a*d^2) - (2*f*(e + f*x)*Log[1 - E^((2*I)*(c +
d*x))])/(a*d^2) + ((3*I)*f*(e + f*x)*PolyLog[2, -E^(I*(c + d*x))])/(a*d^2)
+ ((4*I)*f^2*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^3) - ((3*I)*f*(e + f*x)*Po
lyLog[2, E^(I*(c + d*x))])/(a*d^2) + (I*f^2*PolyLog[2, E^((2*I)*(c + d*x))]
)/(a*d^3) - (3*f^2*PolyLog[3, -E^(I*(c + d*x))])/(a*d^3) + (3*f^2*PolyLog[3
, E^(I*(c + d*x))])/(a*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\csc^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\csc^3(c+dx)\,dx}{a} - \int \frac{(e+fx)^2\csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{f(e+fx)\csc(c+dx)}{ad^2} - \frac{(e+fx)^2\cot(c+dx)\csc(c+dx)}{2ad} + \frac{\int (e+fx)^2\csc(c+d}{2a}$$

$$= -\frac{(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{f^2\tanh^{-1}(\cos(c+dx))}{ad^3} + \frac{(e+fx)^2\cot(c+dx)}{ad} - f$$

$$= \frac{i(e+fx)^2}{ad} - \frac{3(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{f^2\tanh^{-1}(\cos(c+dx))}{ad^3} + \frac{(e+fx)^2\cot}{ad}$$

$$= \frac{i(e+fx)^2}{ad} - \frac{3(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{f^2\tanh^{-1}(\cos(c+dx))}{ad^3} + \frac{(e+fx)^2\cot}{a}$$

$$= \frac{2i(e+fx)^2}{ad} - \frac{3(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{f^2\tanh^{-1}(\cos(c+dx))}{ad^3} + \frac{(e+fx)^2c}{}$$

$$= \frac{2i(e+fx)^2}{ad} - \frac{3(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{f^2\tanh^{-1}(\cos(c+dx))}{ad^3} + \frac{(e+fx)^2c}{}$$

$$= \frac{2i(e+fx)^2}{ad} - \frac{3(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{f^2\tanh^{-1}(\cos(c+dx))}{ad^3} + \frac{(e+fx)^2c}{}$$

$$= \frac{2i(e+fx)^2}{ad} - \frac{3(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{f^2\tanh^{-1}(\cos(c+dx))}{ad^3} + \frac{(e+fx)^2c}{}$$

Mathematica [B] time = 19.51, size = 951, normalized size = 2.43

$$\frac{\frac{32f(\cos(c)+i\sin(c))\left(\frac{(\cos(c)-i\sin(c))(e+fx)^2}{2f} - \frac{\log(i\cos(c+dx)+\sin(c+dx)+1)(i\cos(c)+\sin(c)+1)(e+fx)}{d} + \frac{f\operatorname{Li}_2(-i\cos(c+dx)-\sin(c+dx))(\cos(c)-i(\sin(c)+1))}{d^2}\right)d^2}{\cos(c)+i(\sin(c)+1)} - \frac{(e+fx)\,\mathrm{cs}}{}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Csc[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (8*((2*I)*d^2*e*f*x + I*d^2*f^2*x^2 - 3*d^2*e^2*ArcTanh[Cos[c + d*x] + I*Si
n[c + d*x]] - 2*f^2*ArcTanh[Cos[c + d*x] + I*Sin[c + d*x]] - 6*d^2*e*f*x*Ar
cTanh[Cos[c + d*x] + I*Sin[c + d*x]] - 3*d^2*f^2*x^2*ArcTanh[Cos[c + d*x] +
```

```
I*Sin[c + d*x]] + 2*d^2*e*f*x*Cot[c] + d^2*f^2*x^2*Cot[c] - 2*d*e*f*Log[1
- Cos[2*(c + d*x)] - I*Sin[2*(c + d*x)]] - 2*d*f^2*x*Log[1 - Cos[2*(c + d*x
)] - I*Sin[2*(c + d*x)]] + (3*I)*d*f*(e + f*x)*PolyLog[2, -Cos[c + d*x] - I
*Sin[c + d*x]] - (3*I)*d*f*(e + f*x)*PolyLog[2, Cos[c + d*x] + I*Sin[c + d*
x]] + I*f^2*PolyLog[2, Cos[2*(c + d*x)] + I*Sin[2*(c + d*x)]] - 3*f^2*PolyL
og[3, -Cos[c + d*x] - I*Sin[c + d*x]] + 3*f^2*PolyLog[3, Cos[c + d*x] + I*S
in[c + d*x]]) + (32*d^2*f*(Cos[c] + I*Sin[c])*(((e + f*x)^2*(Cos[c] - I*Sin
[c]))/(2*f) - ((e + f*x)*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(1 + I*Cos[
c] + Sin[c]))/d + (f*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*x]]*(Cos[c] -
 I*(1 + Sin[c])))/d^2))/(Cos[c] + I*(1 + Sin[c])) - (d*(e + f*x)*Csc[c]*Csc
[c + d*x]^2*(2*f*Cos[(d*x)/2] + 2*f*Cos[(3*d*x)/2] + 5*d*e*Cos[c - (d*x)/2]
 + 5*d*f*x*Cos[c - (d*x)/2] - d*e*Cos[c + (d*x)/2] - d*f*x*Cos[c + (d*x)/2]
 - 2*f*Cos[2*c + (d*x)/2] + d*e*Cos[c + (3*d*x)/2] + d*f*x*Cos[c + (3*d*x)/
2] - 2*f*Cos[2*c + (3*d*x)/2] - 3*d*e*Cos[3*c + (3*d*x)/2] - 3*d*f*x*Cos[3*
c + (3*d*x)/2] - 4*d*e*Cos[c + (5*d*x)/2] - 4*d*f*x*Cos[c + (5*d*x)/2] + 2*
d*e*Cos[3*c + (5*d*x)/2] + 2*d*f*x*Cos[3*c + (5*d*x)/2] + d*e*Sin[(d*x)/2]
+ d*f*x*Sin[(d*x)/2] + d*e*Sin[(3*d*x)/2] + d*f*x*Sin[(3*d*x)/2] + 2*f*Sin[
c - (d*x)/2] + 2*f*Sin[c + (d*x)/2] + 3*d*e*Sin[2*c + (d*x)/2] + 3*d*f*x*Si
n[2*c + (d*x)/2] + 2*f*Sin[c + (3*d*x)/2] + d*e*Sin[2*c + (3*d*x)/2] + d*f*
x*Sin[2*c + (3*d*x)/2] - 2*f*Sin[3*c + (3*d*x)/2] - 2*d*e*Sin[2*c + (5*d*x)
/2] - 2*d*f*x*Sin[2*c + (5*d*x)/2]))/((Cos[c/2] + Sin[c/2])*(Cos[(c + d*x)/
2] + Sin[(c + d*x)/2]))))/(8*a*d^3)
```

fricas [C] time = 0.70, size = 4026, normalized size = 10.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(4*d^2*f^2*x^2 + 4*d^2*e^2 - 8*(d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*c
os(d*x + c)^3 - 4*d*e*f - 2*(3*d^2*f^2*x^2 + 3*d^2*e^2 - 2*d*e*f + 2*(3*d^2
*e*f - d*f^2)*x)*cos(d*x + c)^2 + 4*(2*d^2*e*f - d*f^2)*x + 6*(d^2*f^2*x^2
+ 2*d^2*e*f*x + d^2*e^2)*cos(d*x + c) - (6*I*d*f^2*x + (-6*I*d*f^2*x - 6*I*
d*e*f + 4*I*f^2)*cos(d*x + c)^3 + 6*I*d*e*f + (-6*I*d*f^2*x - 6*I*d*e*f + 4
*I*f^2)*cos(d*x + c)^2 - 4*I*f^2 + (6*I*d*f^2*x + 6*I*d*e*f - 4*I*f^2)*cos(
d*x + c) + (6*I*d*f^2*x + 6*I*d*e*f + (-6*I*d*f^2*x - 6*I*d*e*f + 4*I*f^2)*
cos(d*x + c)^2 - 4*I*f^2)*sin(d*x + c))*dilog(cos(d*x + c) + I*sin(d*x + c)
) - (-6*I*d*f^2*x + (6*I*d*f^2*x + 6*I*d*e*f - 4*I*f^2)*cos(d*x + c)^3 - 6*
I*d*e*f + (6*I*d*f^2*x + 6*I*d*e*f - 4*I*f^2)*cos(d*x + c)^2 + 4*I*f^2 + (-
6*I*d*f^2*x - 6*I*d*e*f + 4*I*f^2)*cos(d*x + c) + (-6*I*d*f^2*x - 6*I*d*e*f
 + (6*I*d*f^2*x + 6*I*d*e*f - 4*I*f^2)*cos(d*x + c)^2 + 4*I*f^2)*sin(d*x +
c))*dilog(cos(d*x + c) - I*sin(d*x + c)) - (8*I*f^2*cos(d*x + c)^3 + 8*I*f^
2*cos(d*x + c)^2 - 8*I*f^2*cos(d*x + c) - 8*I*f^2 + (8*I*f^2*cos(d*x + c)^2
 - 8*I*f^2)*sin(d*x + c))*dilog(I*cos(d*x + c) - sin(d*x + c)) - (-8*I*f^2*
```

```
cos(d*x + c)^3 - 8*I*f^2*cos(d*x + c)^2 + 8*I*f^2*cos(d*x + c) + 8*I*f^2 +
(-8*I*f^2*cos(d*x + c)^2 + 8*I*f^2)*sin(d*x + c))*dilog(-I*cos(d*x + c) - s
in(d*x + c)) - (6*I*d*f^2*x + (-6*I*d*f^2*x - 6*I*d*e*f - 4*I*f^2)*cos(d*x
+ c)^3 + 6*I*d*e*f + (-6*I*d*f^2*x - 6*I*d*e*f - 4*I*f^2)*cos(d*x + c)^2 +
4*I*f^2 + (6*I*d*f^2*x + 6*I*d*e*f + 4*I*f^2)*cos(d*x + c) + (6*I*d*f^2*x +
 6*I*d*e*f + (-6*I*d*f^2*x - 6*I*d*e*f - 4*I*f^2)*cos(d*x + c)^2 + 4*I*f^2)
*sin(d*x + c))*dilog(-cos(d*x + c) + I*sin(d*x + c)) - (-6*I*d*f^2*x + (6*I
*d*f^2*x + 6*I*d*e*f + 4*I*f^2)*cos(d*x + c)^3 - 6*I*d*e*f + (6*I*d*f^2*x +
 6*I*d*e*f + 4*I*f^2)*cos(d*x + c)^2 - 4*I*f^2 + (-6*I*d*f^2*x - 6*I*d*e*f
- 4*I*f^2)*cos(d*x + c) + (-6*I*d*f^2*x - 6*I*d*e*f + (6*I*d*f^2*x + 6*I*d*
e*f + 4*I*f^2)*cos(d*x + c)^2 - 4*I*f^2)*sin(d*x + c))*dilog(-cos(d*x + c)
- I*sin(d*x + c)) - (3*d^2*f^2*x^2 + 3*d^2*e^2 - (3*d^2*f^2*x^2 + 3*d^2*e^2
 + 4*d*e*f + 2*f^2 + 2*(3*d^2*e*f + 2*d*f^2)*x)*cos(d*x + c)^3 + 4*d*e*f -
(3*d^2*f^2*x^2 + 3*d^2*e^2 + 4*d*e*f + 2*f^2 + 2*(3*d^2*e*f + 2*d*f^2)*x)*c
os(d*x + c)^2 + 2*f^2 + 2*(3*d^2*e*f + 2*d*f^2)*x + (3*d^2*f^2*x^2 + 3*d^2*
e^2 + 4*d*e*f + 2*f^2 + 2*(3*d^2*e*f + 2*d*f^2)*x)*cos(d*x + c) + (3*d^2*f^
2*x^2 + 3*d^2*e^2 + 4*d*e*f - (3*d^2*f^2*x^2 + 3*d^2*e^2 + 4*d*e*f + 2*f^2
+ 2*(3*d^2*e*f + 2*d*f^2)*x)*cos(d*x + c)^2 + 2*f^2 + 2*(3*d^2*e*f + 2*d*f^
2)*x)*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c) + 1) + 8*((d*e*f - c*
f^2)*cos(d*x + c)^3 - d*e*f + c*f^2 + (d*e*f - c*f^2)*cos(d*x + c)^2 - (d*e
*f - c*f^2)*cos(d*x + c) - (d*e*f - c*f^2 - (d*e*f - c*f^2)*cos(d*x + c)^2)
*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c) + I) - (3*d^2*f^2*x^2 + 3*
d^2*e^2 - (3*d^2*f^2*x^2 + 3*d^2*e^2 + 4*d*e*f + 2*f^2 + 2*(3*d^2*e*f + 2*d
*f^2)*x)*cos(d*x + c)^3 + 4*d*e*f - (3*d^2*f^2*x^2 + 3*d^2*e^2 + 4*d*e*f +
2*f^2 + 2*(3*d^2*e*f + 2*d*f^2)*x)*cos(d*x + c)^2 + 2*f^2 + 2*(3*d^2*e*f +
2*d*f^2)*x + (3*d^2*f^2*x^2 + 3*d^2*e^2 + 4*d*e*f + 2*f^2 + 2*(3*d^2*e*f +
2*d*f^2)*x)*cos(d*x + c) + (3*d^2*f^2*x^2 + 3*d^2*e^2 + 4*d*e*f - (3*d^2*f^
2*x^2 + 3*d^2*e^2 + 4*d*e*f + 2*f^2 + 2*(3*d^2*e*f + 2*d*f^2)*x)*cos(d*x +
c)^2 + 2*f^2 + 2*(3*d^2*e*f + 2*d*f^2)*x)*sin(d*x + c))*log(cos(d*x + c) -
I*sin(d*x + c) + 1) - 8*(d*f^2*x - (d*f^2*x + c*f^2)*cos(d*x + c)^3 + c*f^2
 - (d*f^2*x + c*f^2)*cos(d*x + c)^2 + (d*f^2*x + c*f^2)*cos(d*x + c) + (d*f
^2*x + c*f^2 - (d*f^2*x + c*f^2)*cos(d*x + c)^2)*sin(d*x + c))*log(I*cos(d*
x + c) + sin(d*x + c) + 1) - 8*(d*f^2*x - (d*f^2*x + c*f^2)*cos(d*x + c)^3
+ c*f^2 - (d*f^2*x + c*f^2)*cos(d*x + c)^2 + (d*f^2*x + c*f^2)*cos(d*x + c)
 + (d*f^2*x + c*f^2 - (d*f^2*x + c*f^2)*cos(d*x + c)^2)*sin(d*x + c))*log(-
I*cos(d*x + c) + sin(d*x + c) + 1) + (3*d^2*e^2 - 2*(3*c + 2)*d*e*f - (3*d^
2*e^2 - 2*(3*c + 2)*d*e*f + (3*c^2 + 4*c + 2)*f^2)*cos(d*x + c)^3 + (3*c^2
+ 4*c + 2)*f^2 - (3*d^2*e^2 - 2*(3*c + 2)*d*e*f + (3*c^2 + 4*c + 2)*f^2)*co
s(d*x + c)^2 + (3*d^2*e^2 - 2*(3*c + 2)*d*e*f + (3*c^2 + 4*c + 2)*f^2)*cos(
d*x + c) + (3*d^2*e^2 - 2*(3*c + 2)*d*e*f + (3*c^2 + 4*c + 2)*f^2 - (3*d^2*
e^2 - 2*(3*c + 2)*d*e*f + (3*c^2 + 4*c + 2)*f^2)*cos(d*x + c)^2)*sin(d*x +
c))*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) + (3*d^2*e^2 - 2*(3*c
 + 2)*d*e*f - (3*d^2*e^2 - 2*(3*c + 2)*d*e*f + (3*c^2 + 4*c + 2)*f^2)*cos(d
*x + c)^3 + (3*c^2 + 4*c + 2)*f^2 - (3*d^2*e^2 - 2*(3*c + 2)*d*e*f + (3*c^2
 + 4*c + 2)*f^2)*cos(d*x + c)^2 + (3*d^2*e^2 - 2*(3*c + 2)*d*e*f + (3*c^2 +
```

```
4*c + 2)*f^2)*cos(d*x + c) + (3*d^2*e^2 - 2*(3*c + 2)*d*e*f + (3*c^2 + 4*c
 + 2)*f^2 - (3*d^2*e^2 - 2*(3*c + 2)*d*e*f + (3*c^2 + 4*c + 2)*f^2)*cos(d*x
 + c)^2)*sin(d*x + c))*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2) +
(3*d^2*f^2*x^2 + 6*c*d*e*f - (3*d^2*f^2*x^2 + 6*c*d*e*f - (3*c^2 + 4*c)*f^2
 + 2*(3*d^2*e*f - 2*d*f^2)*x)*cos(d*x + c)^3 - (3*c^2 + 4*c)*f^2 - (3*d^2*f
^2*x^2 + 6*c*d*e*f - (3*c^2 + 4*c)*f^2 + 2*(3*d^2*e*f - 2*d*f^2)*x)*cos(d*x
 + c)^2 + 2*(3*d^2*e*f - 2*d*f^2)*x + (3*d^2*f^2*x^2 + 6*c*d*e*f - (3*c^2 +
 4*c)*f^2 + 2*(3*d^2*e*f - 2*d*f^2)*x)*cos(d*x + c) + (3*d^2*f^2*x^2 + 6*c*
d*e*f - (3*c^2 + 4*c)*f^2 - (3*d^2*f^2*x^2 + 6*c*d*e*f - (3*c^2 + 4*c)*f^2
+ 2*(3*d^2*e*f - 2*d*f^2)*x)*cos(d*x + c)^2 + 2*(3*d^2*e*f - 2*d*f^2)*x)*si
n(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + 1) + 8*((d*e*f - c*f^2)*co
s(d*x + c)^3 - d*e*f + c*f^2 + (d*e*f - c*f^2)*cos(d*x + c)^2 - (d*e*f - c*
f^2)*cos(d*x + c) - (d*e*f - c*f^2 - (d*e*f - c*f^2)*cos(d*x + c)^2)*sin(d*
x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + I) + (3*d^2*f^2*x^2 + 6*c*d*e*
f - (3*d^2*f^2*x^2 + 6*c*d*e*f - (3*c^2 + 4*c)*f^2 + 2*(3*d^2*e*f - 2*d*f^2
)*x)*cos(d*x + c)^3 - (3*c^2 + 4*c)*f^2 - (3*d^2*f^2*x^2 + 6*c*d*e*f - (3*c
^2 + 4*c)*f^2 + 2*(3*d^2*e*f - 2*d*f^2)*x)*cos(d*x + c)^2 + 2*(3*d^2*e*f -
2*d*f^2)*x + (3*d^2*f^2*x^2 + 6*c*d*e*f - (3*c^2 + 4*c)*f^2 + 2*(3*d^2*e*f
- 2*d*f^2)*x)*cos(d*x + c) + (3*d^2*f^2*x^2 + 6*c*d*e*f - (3*c^2 + 4*c)*f^2
 - (3*d^2*f^2*x^2 + 6*c*d*e*f - (3*c^2 + 4*c)*f^2 + 2*(3*d^2*e*f - 2*d*f^2)
*x)*cos(d*x + c)^2 + 2*(3*d^2*e*f - 2*d*f^2)*x)*sin(d*x + c))*log(-cos(d*x
+ c) - I*sin(d*x + c) + 1) - 6*(f^2*cos(d*x + c)^3 + f^2*cos(d*x + c)^2 - f
^2*cos(d*x + c) - f^2 + (f^2*cos(d*x + c)^2 - f^2)*sin(d*x + c))*polylog(3,
 cos(d*x + c) + I*sin(d*x + c)) - 6*(f^2*cos(d*x + c)^3 + f^2*cos(d*x + c)^
2 - f^2*cos(d*x + c) - f^2 + (f^2*cos(d*x + c)^2 - f^2)*sin(d*x + c))*polyl
og(3, cos(d*x + c) - I*sin(d*x + c)) + 6*(f^2*cos(d*x + c)^3 + f^2*cos(d*x
+ c)^2 - f^2*cos(d*x + c) - f^2 + (f^2*cos(d*x + c)^2 - f^2)*sin(d*x + c))*
polylog(3, -cos(d*x + c) + I*sin(d*x + c)) + 6*(f^2*cos(d*x + c)^3 + f^2*co
s(d*x + c)^2 - f^2*cos(d*x + c) - f^2 + (f^2*cos(d*x + c)^2 - f^2)*sin(d*x
+ c))*polylog(3, -cos(d*x + c) - I*sin(d*x + c)) - 2*(2*d^2*f^2*x^2 + 2*d^2
*e^2 + 2*d*e*f - 4*(d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*cos(d*x + c)^2 + 2
*(2*d^2*e*f + d*f^2)*x - (d^2*f^2*x^2 + d^2*e^2 - 2*d*e*f + 2*(d^2*e*f - d*
f^2)*x)*cos(d*x + c))*sin(d*x + c))/(a*d^3*cos(d*x + c)^3 + a*d^3*cos(d*x +
 c)^2 - a*d^3*cos(d*x + c) - a*d^3 + (a*d^3*cos(d*x + c)^2 - a*d^3)*sin(d*x
 + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.38, size = 1215, normalized size = 3.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csc(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/d^3/a*f^2*ln(exp(I*(d*x+c))+1)+1/d^3/a*f^2*ln(exp(I*(d*x+c))-1)+2/a/d^3*
f^2*c*ln(exp(I*(d*x+c))-1)-2/a/d^2*e*f*ln(exp(I*(d*x+c))+1)-2/a/d^2*e*f*ln(
exp(I*(d*x+c))-1)-2/a/d^2*f^2*ln(1-exp(I*(d*x+c)))*x-2/a/d^3*f^2*ln(1-exp(I
*(d*x+c)))*c-2/a/d^2*f^2*ln(exp(I*(d*x+c))+1)*x-3/2/a/d*e^2*ln(exp(I*(d*x+c
))+1)+3/2/a/d*e^2*ln(exp(I*(d*x+c))-1)-4/a/d^2*f*ln(exp(I*(d*x+c))+I)*e+8/a
/d^2*f*ln(exp(I*(d*x+c)))*e-4/a/d^2*f^2*ln(1-I*exp(I*(d*x+c)))*x-4/a/d^3*f^
2*ln(1-I*exp(I*(d*x+c)))*c+4/a/d^3*f^2*c*ln(exp(I*(d*x+c))+I)-8/a/d^3*f^2*c
*ln(exp(I*(d*x+c)))-3/a/d^2*e*f*c*ln(exp(I*(d*x+c))-1)+3/a/d*ln(1-exp(I*(d*
x+c)))*e*f*x-3/a/d*ln(exp(I*(d*x+c))+1)*e*f*x+3/a/d^2*ln(1-exp(I*(d*x+c)))*
c*e*f-3/2/a/d^3*f^2*ln(1-exp(I*(d*x+c)))*c^2-3/2/a/d*f^2*ln(exp(I*(d*x+c))+
1)*x^2+3/2/a/d^3*f^2*c^2*ln(exp(I*(d*x+c))-1)+3/2/a/d*f^2*ln(1-exp(I*(d*x+c
)))*x^2+2*I*f^2*polylog(2,-exp(I*(d*x+c)))/a/d^3+4*I/d/a*f^2*x^2+4*I/d^3/a*
c^2*f^2+2*I/d^3/a*f^2*polylog(2,exp(I*(d*x+c)))-3*f^2*polylog(3,-exp(I*(d*x
+c)))/a/d^3+3*f^2*polylog(3,exp(I*(d*x+c)))/a/d^3+4*I*f^2*polylog(2,I*exp(I
*(d*x+c)))/a/d^3+3*I/d^2/a*polylog(2,-exp(I*(d*x+c)))*f^2*x-3*I/d^2/a*polyl
og(2,exp(I*(d*x+c)))*f^2*x+8*I/d^2/a*c*f^2*x-3*I/d^2/a*e*f*polylog(2,exp(I*
(d*x+c)))+3*I/d^2/a*e*f*polylog(2,-exp(I*(d*x+c)))+(3*d*f^2*x^2*exp(4*I*(d*
x+c))+6*d*e*f*x*exp(4*I*(d*x+c))+3*d*e^2*exp(4*I*(d*x+c))-5*d*f^2*x^2*exp(2
*I*(d*x+c))-I*d*e^2*exp(I*(d*x+c))-10*d*e*f*x*exp(2*I*(d*x+c))+2*f^2*x*exp(
3*I*(d*x+c))+2*I*e*f*exp(2*I*(d*x+c))+6*I*d*e*f*x*exp(3*I*(d*x+c))-5*d*e^2*
exp(2*I*(d*x+c))+4*d*f^2*x^2+2*e*f*exp(3*I*(d*x+c))+3*I*d*e^2*exp(3*I*(d*x+
c))-I*d*f^2*x^2*exp(I*(d*x+c))-2*I*d*e*f*x*exp(I*(d*x+c))+8*d*e*f*x-2*f^2*x
*exp(I*(d*x+c))-2*I*e*f*exp(4*I*(d*x+c))+3*I*d*f^2*x^2*exp(3*I*(d*x+c))+4*d
*e^2-2*exp(I*(d*x+c))*e*f-2*I*f^2*x*exp(4*I*(d*x+c))+2*I*f^2*x*exp(2*I*(d*x
+c)))/(exp(2*I*(d*x+c))-1)^2/d^2/(exp(I*(d*x+c))+I)/a
```

maxima [B] time = 7.60, size = 6123, normalized size = 15.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/8*(2*c*e*f*((3*sin(d*x + c)/(cos(d*x + c) + 1) + 20*sin(d*x + c)^2/(cos(
d*x + c) + 1)^2 - 1)/(a*d*sin(d*x + c)^2/(cos(d*x + c) + 1)^2 + a*d*sin(d*x
 + c)^3/(cos(d*x + c) + 1)^3) - (4*sin(d*x + c)/(cos(d*x + c) + 1) - sin(d*
x + c)^2/(cos(d*x + c) + 1)^2)/(a*d) + 12*log(sin(d*x + c)/(cos(d*x + c) +
```

```
1))/(a*d)) + e^2*((4*sin(d*x + c)/(cos(d*x + c) + 1) - sin(d*x + c)^2/(cos(
d*x + c) + 1)^2)/a - (3*sin(d*x + c)/(cos(d*x + c) + 1) + 20*sin(d*x + c)^2
/(cos(d*x + c) + 1)^2 - 1)/(a*sin(d*x + c)^2/(cos(d*x + c) + 1)^2 + a*sin(d
*x + c)^3/(cos(d*x + c) + 1)^3) - 12*log(sin(d*x + c)/(cos(d*x + c) + 1))/a
) + 8*(16*I*c^2*f^2 + (16*I*d*e*f - 16*I*c*f^2 + 16*(d*e*f - c*f^2)*cos(5*d
*x + 5*c) + (16*I*d*e*f - 16*I*c*f^2)*cos(4*d*x + 4*c) - 32*(d*e*f - c*f^2)
*cos(3*d*x + 3*c) + (-32*I*d*e*f + 32*I*c*f^2)*cos(2*d*x + 2*c) + 16*(d*e*f
 - c*f^2)*cos(d*x + c) + (16*I*d*e*f - 16*I*c*f^2)*sin(5*d*x + 5*c) - 16*(d
*e*f - c*f^2)*sin(4*d*x + 4*c) + (-32*I*d*e*f + 32*I*c*f^2)*sin(3*d*x + 3*c
) + 32*(d*e*f - c*f^2)*sin(2*d*x + 2*c) + (16*I*d*e*f - 16*I*c*f^2)*sin(d*x
 + c))*arctan2(sin(d*x + c) + 1, cos(d*x + c)) - (16*(d*x + c)*f^2*cos(5*d*
x + 5*c) + 16*I*(d*x + c)*f^2*cos(4*d*x + 4*c) - 32*(d*x + c)*f^2*cos(3*d*x
 + 3*c) - 32*I*(d*x + c)*f^2*cos(2*d*x + 2*c) + 16*(d*x + c)*f^2*cos(d*x +
c) + 16*I*(d*x + c)*f^2*sin(5*d*x + 5*c) - 16*(d*x + c)*f^2*sin(4*d*x + 4*c
) - 32*I*(d*x + c)*f^2*sin(3*d*x + 3*c) + 32*(d*x + c)*f^2*sin(2*d*x + 2*c)
 + 16*I*(d*x + c)*f^2*sin(d*x + c) + 16*I*(d*x + c)*f^2)*arctan2(cos(d*x +
c), sin(d*x + c) + 1) + (6*I*(d*x + c)^2*f^2 + 8*I*d*e*f + (6*I*c^2 - 8*I*c
 + 4*I)*f^2 + (12*I*d*e*f + (-12*I*c + 8*I)*f^2)*(d*x + c) + 2*(3*(d*x + c)
^2*f^2 + 4*d*e*f + (3*c^2 - 4*c + 2)*f^2 + 2*(3*d*e*f - (3*c - 2)*f^2)*(d*x
 + c))*cos(5*d*x + 5*c) + (6*I*(d*x + c)^2*f^2 + 8*I*d*e*f + (6*I*c^2 - 8*I
*c + 4*I)*f^2 + (12*I*d*e*f + (-12*I*c + 8*I)*f^2)*(d*x + c))*cos(4*d*x + 4
*c) - 4*(3*(d*x + c)^2*f^2 + 4*d*e*f + (3*c^2 - 4*c + 2)*f^2 + 2*(3*d*e*f -
 (3*c - 2)*f^2)*(d*x + c))*cos(3*d*x + 3*c) + (-12*I*(d*x + c)^2*f^2 - 16*I
*d*e*f + (-12*I*c^2 + 16*I*c - 8*I)*f^2 + (-24*I*d*e*f + (24*I*c - 16*I)*f^
2)*(d*x + c))*cos(2*d*x + 2*c) + 2*(3*(d*x + c)^2*f^2 + 4*d*e*f + (3*c^2 -
4*c + 2)*f^2 + 2*(3*d*e*f - (3*c - 2)*f^2)*(d*x + c))*cos(d*x + c) + (6*I*(
d*x + c)^2*f^2 + 8*I*d*e*f + (6*I*c^2 - 8*I*c + 4*I)*f^2 + (12*I*d*e*f + (-
12*I*c + 8*I)*f^2)*(d*x + c))*sin(5*d*x + 5*c) - 2*(3*(d*x + c)^2*f^2 + 4*d
*e*f + (3*c^2 - 4*c + 2)*f^2 + 2*(3*d*e*f - (3*c - 2)*f^2)*(d*x + c))*sin(4
*d*x + 4*c) + (-12*I*(d*x + c)^2*f^2 - 16*I*d*e*f + (-12*I*c^2 + 16*I*c - 8
*I)*f^2 + (-24*I*d*e*f + (24*I*c - 16*I)*f^2)*(d*x + c))*sin(3*d*x + 3*c) +
 4*(3*(d*x + c)^2*f^2 + 4*d*e*f + (3*c^2 - 4*c + 2)*f^2 + 2*(3*d*e*f - (3*c
 - 2)*f^2)*(d*x + c))*sin(2*d*x + 2*c) + (6*I*(d*x + c)^2*f^2 + 8*I*d*e*f +
 (6*I*c^2 - 8*I*c + 4*I)*f^2 + (12*I*d*e*f + (-12*I*c + 8*I)*f^2)*(d*x + c)
)*sin(d*x + c))*arctan2(sin(d*x + c), cos(d*x + c) + 1) + (8*I*d*e*f + (-6*
I*c^2 - 8*I*c - 4*I)*f^2 + 2*(4*d*e*f - (3*c^2 + 4*c + 2)*f^2)*cos(5*d*x +
5*c) + (8*I*d*e*f + (-6*I*c^2 - 8*I*c - 4*I)*f^2)*cos(4*d*x + 4*c) - 4*(4*d
*e*f - (3*c^2 + 4*c + 2)*f^2)*cos(3*d*x + 3*c) + (-16*I*d*e*f + (12*I*c^2 +
 16*I*c + 8*I)*f^2)*cos(2*d*x + 2*c) + 2*(4*d*e*f - (3*c^2 + 4*c + 2)*f^2)*
cos(d*x + c) + (8*I*d*e*f + (-6*I*c^2 - 8*I*c - 4*I)*f^2)*sin(5*d*x + 5*c)
- 2*(4*d*e*f - (3*c^2 + 4*c + 2)*f^2)*sin(4*d*x + 4*c) + (-16*I*d*e*f + (12
*I*c^2 + 16*I*c + 8*I)*f^2)*sin(3*d*x + 3*c) + 4*(4*d*e*f - (3*c^2 + 4*c +
2)*f^2)*sin(2*d*x + 2*c) + (8*I*d*e*f + (-6*I*c^2 - 8*I*c - 4*I)*f^2)*sin(d
*x + c))*arctan2(sin(d*x + c), cos(d*x + c) - 1) + (6*I*(d*x + c)^2*f^2 + (
12*I*d*e*f + (-12*I*c - 8*I)*f^2)*(d*x + c) + 2*(3*(d*x + c)^2*f^2 + 2*(3*d
```

```
*e*f - (3*c + 2)*f^2)*(d*x + c))*cos(5*d*x + 5*c) + (6*I*(d*x + c)^2*f^2 +
(12*I*d*e*f + (-12*I*c - 8*I)*f^2)*(d*x + c))*cos(4*d*x + 4*c) - 4*(3*(d*x
+ c)^2*f^2 + 2*(3*d*e*f - (3*c + 2)*f^2)*(d*x + c))*cos(3*d*x + 3*c) + (-12
*I*(d*x + c)^2*f^2 + (-24*I*d*e*f + (24*I*c + 16*I)*f^2)*(d*x + c))*cos(2*d
*x + 2*c) + 2*(3*(d*x + c)^2*f^2 + 2*(3*d*e*f - (3*c + 2)*f^2)*(d*x + c))*c
os(d*x + c) + (6*I*(d*x + c)^2*f^2 + (12*I*d*e*f + (-12*I*c - 8*I)*f^2)*(d*
x + c))*sin(5*d*x + 5*c) - 2*(3*(d*x + c)^2*f^2 + 2*(3*d*e*f - (3*c + 2)*f^
2)*(d*x + c))*sin(4*d*x + 4*c) + (-12*I*(d*x + c)^2*f^2 + (-24*I*d*e*f + (2
4*I*c + 16*I)*f^2)*(d*x + c))*sin(3*d*x + 3*c) + 4*(3*(d*x + c)^2*f^2 + 2*(
3*d*e*f - (3*c + 2)*f^2)*(d*x + c))*sin(2*d*x + 2*c) + (6*I*(d*x + c)^2*f^2
 + (12*I*d*e*f + (-12*I*c - 8*I)*f^2)*(d*x + c))*sin(d*x + c))*arctan2(sin(
d*x + c), -cos(d*x + c) + 1) - 16*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x
 + c))*cos(5*d*x + 5*c) + (-4*I*(d*x + c)^2*f^2 + 8*d*e*f + (12*I*c^2 - 8*c
)*f^2 + (-8*I*d*e*f - 8*(-I*c - 1)*f^2)*(d*x + c))*cos(4*d*x + 4*c) + (20*(
d*x + c)^2*f^2 + 8*I*d*e*f - 4*(3*c^2 + 2*I*c)*f^2 + (40*d*e*f - (40*c - 8*
I)*f^2)*(d*x + c))*cos(3*d*x + 3*c) + (12*I*(d*x + c)^2*f^2 - 8*d*e*f + (-2
0*I*c^2 + 8*c)*f^2 - 8*(-3*I*d*e*f + (3*I*c + 1)*f^2)*(d*x + c))*cos(2*d*x
+ 2*c) - (12*(d*x + c)^2*f^2 + 8*I*d*e*f - 4*(c^2 + 2*I*c)*f^2 + (24*d*e*f
- (24*c - 8*I)*f^2)*(d*x + c))*cos(d*x + c) - (16*f^2*cos(5*d*x + 5*c) + 16
*I*f^2*cos(4*d*x + 4*c) - 32*f^2*cos(3*d*x + 3*c) - 32*I*f^2*cos(2*d*x + 2*
c) + 16*f^2*cos(d*x + c) + 16*I*f^2*sin(5*d*x + 5*c) - 16*f^2*sin(4*d*x + 4
*c) - 32*I*f^2*sin(3*d*x + 3*c) + 32*f^2*sin(2*d*x + 2*c) + 16*I*f^2*sin(d*
x + c) + 16*I*f^2)*dilog(I*e^(I*d*x + I*c)) + (-12*I*d*e*f - 12*I*(d*x + c)
*f^2 + (12*I*c - 8*I)*f^2 - 4*(3*d*e*f + 3*(d*x + c)*f^2 - (3*c - 2)*f^2)*c
os(5*d*x + 5*c) + (-12*I*d*e*f - 12*I*(d*x + c)*f^2 + (12*I*c - 8*I)*f^2)*c
os(4*d*x + 4*c) + 8*(3*d*e*f + 3*(d*x + c)*f^2 - (3*c - 2)*f^2)*cos(3*d*x +
 3*c) + (24*I*d*e*f + 24*I*(d*x + c)*f^2 + (-24*I*c + 16*I)*f^2)*cos(2*d*x
+ 2*c) - 4*(3*d*e*f + 3*(d*x + c)*f^2 - (3*c - 2)*f^2)*cos(d*x + c) + (-12*
I*d*e*f - 12*I*(d*x + c)*f^2 + (12*I*c - 8*I)*f^2)*sin(5*d*x + 5*c) + 4*(3*
d*e*f + 3*(d*x + c)*f^2 - (3*c - 2)*f^2)*sin(4*d*x + 4*c) + (24*I*d*e*f + 2
4*I*(d*x + c)*f^2 + (-24*I*c + 16*I)*f^2)*sin(3*d*x + 3*c) - 8*(3*d*e*f + 3
*(d*x + c)*f^2 - (3*c - 2)*f^2)*sin(2*d*x + 2*c) + (-12*I*d*e*f - 12*I*(d*x
 + c)*f^2 + (12*I*c - 8*I)*f^2)*sin(d*x + c))*dilog(-e^(I*d*x + I*c)) + (12
*I*d*e*f + 12*I*(d*x + c)*f^2 + (-12*I*c - 8*I)*f^2 + 4*(3*d*e*f + 3*(d*x +
 c)*f^2 - (3*c + 2)*f^2)*cos(5*d*x + 5*c) + (12*I*d*e*f + 12*I*(d*x + c)*f^
2 + (-12*I*c - 8*I)*f^2)*cos(4*d*x + 4*c) - 8*(3*d*e*f + 3*(d*x + c)*f^2 -
(3*c + 2)*f^2)*cos(3*d*x + 3*c) + (-24*I*d*e*f - 24*I*(d*x + c)*f^2 + (24*I
*c + 16*I)*f^2)*cos(2*d*x + 2*c) + 4*(3*d*e*f + 3*(d*x + c)*f^2 - (3*c + 2)
*f^2)*cos(d*x + c) + (12*I*d*e*f + 12*I*(d*x + c)*f^2 + (-12*I*c - 8*I)*f^2
)*sin(5*d*x + 5*c) - 4*(3*d*e*f + 3*(d*x + c)*f^2 - (3*c + 2)*f^2)*sin(4*d*
x + 4*c) + (-24*I*d*e*f - 24*I*(d*x + c)*f^2 + (24*I*c + 16*I)*f^2)*sin(3*d
*x + 3*c) + 8*(3*d*e*f + 3*(d*x + c)*f^2 - (3*c + 2)*f^2)*sin(2*d*x + 2*c)
+ (12*I*d*e*f + 12*I*(d*x + c)*f^2 + (-12*I*c - 8*I)*f^2)*sin(d*x + c))*dil
og(e^(I*d*x + I*c)) + (3*(d*x + c)^2*f^2 + 4*d*e*f + (3*c^2 - 4*c + 2)*f^2
+ 2*(3*d*e*f - (3*c - 2)*f^2)*(d*x + c) + (-3*I*(d*x + c)^2*f^2 - 4*I*d*e*f
```

```
 + (-3*I*c^2 + 4*I*c - 2*I)*f^2 + (-6*I*d*e*f + (6*I*c - 4*I)*f^2)*(d*x + c
))*cos(5*d*x + 5*c) + (3*(d*x + c)^2*f^2 + 4*d*e*f + (3*c^2 - 4*c + 2)*f^2
+ 2*(3*d*e*f - (3*c - 2)*f^2)*(d*x + c))*cos(4*d*x + 4*c) + (6*I*(d*x + c)^
2*f^2 + 8*I*d*e*f + (6*I*c^2 - 8*I*c + 4*I)*f^2 + (12*I*d*e*f + (-12*I*c +
8*I)*f^2)*(d*x + c))*cos(3*d*x + 3*c) - 2*(3*(d*x + c)^2*f^2 + 4*d*e*f + (3
*c^2 - 4*c + 2)*f^2 + 2*(3*d*e*f - (3*c - 2)*f^2)*(d*x + c))*cos(2*d*x + 2*
c) + (-3*I*(d*x + c)^2*f^2 - 4*I*d*e*f + (-3*I*c^2 + 4*I*c - 2*I)*f^2 + (-6
*I*d*e*f + (6*I*c - 4*I)*f^2)*(d*x + c))*cos(d*x + c) + (3*(d*x + c)^2*f^2
+ 4*d*e*f + (3*c^2 - 4*c + 2)*f^2 + 2*(3*d*e*f - (3*c - 2)*f^2)*(d*x + c))*
sin(5*d*x + 5*c) + (3*I*(d*x + c)^2*f^2 + 4*I*d*e*f + (3*I*c^2 - 4*I*c + 2*
I)*f^2 + (6*I*d*e*f + (-6*I*c + 4*I)*f^2)*(d*x + c))*sin(4*d*x + 4*c) - 2*(
3*(d*x + c)^2*f^2 + 4*d*e*f + (3*c^2 - 4*c + 2)*f^2 + 2*(3*d*e*f - (3*c - 2
)*f^2)*(d*x + c))*sin(3*d*x + 3*c) + (-6*I*(d*x + c)^2*f^2 - 8*I*d*e*f + (-
6*I*c^2 + 8*I*c - 4*I)*f^2 + (-12*I*d*e*f + (12*I*c - 8*I)*f^2)*(d*x + c))*
sin(2*d*x + 2*c) + (3*(d*x + c)^2*f^2 + 4*d*e*f + (3*c^2 - 4*c + 2)*f^2 + 2
*(3*d*e*f - (3*c - 2)*f^2)*(d*x + c))*sin(d*x + c))*log(cos(d*x + c)^2 + si
n(d*x + c)^2 + 2*cos(d*x + c) + 1) - (3*(d*x + c)^2*f^2 - 4*d*e*f + (3*c^2
+ 4*c + 2)*f^2 + 2*(3*d*e*f - (3*c + 2)*f^2)*(d*x + c) - (3*I*(d*x + c)^2*f
^2 - 4*I*d*e*f + (3*I*c^2 + 4*I*c + 2*I)*f^2 + (6*I*d*e*f + (-6*I*c - 4*I)*
f^2)*(d*x + c))*cos(5*d*x + 5*c) + (3*(d*x + c)^2*f^2 - 4*d*e*f + (3*c^2 +
4*c + 2)*f^2 + 2*(3*d*e*f - (3*c + 2)*f^2)*(d*x + c))*cos(4*d*x + 4*c) - (-
6*I*(d*x + c)^2*f^2 + 8*I*d*e*f + (-6*I*c^2 - 8*I*c - 4*I)*f^2 + (-12*I*d*e
*f + (12*I*c + 8*I)*f^2)*(d*x + c))*cos(3*d*x + 3*c) - 2*(3*(d*x + c)^2*f^2
 - 4*d*e*f + (3*c^2 + 4*c + 2)*f^2 + 2*(3*d*e*f - (3*c + 2)*f^2)*(d*x + c))
*cos(2*d*x + 2*c) - (3*I*(d*x + c)^2*f^2 - 4*I*d*e*f + (3*I*c^2 + 4*I*c + 2
*I)*f^2 + (6*I*d*e*f + (-6*I*c - 4*I)*f^2)*(d*x + c))*cos(d*x + c) + (3*(d*
x + c)^2*f^2 - 4*d*e*f + (3*c^2 + 4*c + 2)*f^2 + 2*(3*d*e*f - (3*c + 2)*f^2
)*(d*x + c))*sin(5*d*x + 5*c) - (-3*I*(d*x + c)^2*f^2 + 4*I*d*e*f + (-3*I*c
^2 - 4*I*c - 2*I)*f^2 + (-6*I*d*e*f + (6*I*c + 4*I)*f^2)*(d*x + c))*sin(4*d
*x + 4*c) - 2*(3*(d*x + c)^2*f^2 - 4*d*e*f + (3*c^2 + 4*c + 2)*f^2 + 2*(3*d
*e*f - (3*c + 2)*f^2)*(d*x + c))*sin(3*d*x + 3*c) - (6*I*(d*x + c)^2*f^2 -
8*I*d*e*f + (6*I*c^2 + 8*I*c + 4*I)*f^2 + (12*I*d*e*f + (-12*I*c - 8*I)*f^2
)*(d*x + c))*sin(2*d*x + 2*c) + (3*(d*x + c)^2*f^2 - 4*d*e*f + (3*c^2 + 4*c
 + 2)*f^2 + 2*(3*d*e*f - (3*c + 2)*f^2)*(d*x + c))*sin(d*x + c))*log(cos(d*
x + c)^2 + sin(d*x + c)^2 - 2*cos(d*x + c) + 1) + (8*d*e*f + 8*(d*x + c)*f^
2 - 8*c*f^2 + (-8*I*d*e*f - 8*I*(d*x + c)*f^2 + 8*I*c*f^2)*cos(5*d*x + 5*c)
 + 8*(d*e*f + (d*x + c)*f^2 - c*f^2)*cos(4*d*x + 4*c) + (16*I*d*e*f + 16*I*
(d*x + c)*f^2 - 16*I*c*f^2)*cos(3*d*x + 3*c) - 16*(d*e*f + (d*x + c)*f^2 -
c*f^2)*cos(2*d*x + 2*c) + (-8*I*d*e*f - 8*I*(d*x + c)*f^2 + 8*I*c*f^2)*cos(
d*x + c) + 8*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(5*d*x + 5*c) + (8*I*d*e*f
+ 8*I*(d*x + c)*f^2 - 8*I*c*f^2)*sin(4*d*x + 4*c) - 16*(d*e*f + (d*x + c)*f
^2 - c*f^2)*sin(3*d*x + 3*c) + (-16*I*d*e*f - 16*I*(d*x + c)*f^2 + 16*I*c*f
^2)*sin(2*d*x + 2*c) + 8*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(d*x + c))*log(
cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) + (-12*I*f^2*cos(5*d*
x + 5*c) + 12*f^2*cos(4*d*x + 4*c) + 24*I*f^2*cos(3*d*x + 3*c) - 24*f^2*cos
```

```
(2*d*x + 2*c) - 12*I*f^2*cos(d*x + c) + 12*f^2*sin(5*d*x + 5*c) + 12*I*f^2*
sin(4*d*x + 4*c) - 24*f^2*sin(3*d*x + 3*c) - 24*I*f^2*sin(2*d*x + 2*c) + 12
*f^2*sin(d*x + c) + 12*f^2)*polylog(3, -e^(I*d*x + I*c)) + (12*I*f^2*cos(5*
d*x + 5*c) - 12*f^2*cos(4*d*x + 4*c) - 24*I*f^2*cos(3*d*x + 3*c) + 24*f^2*c
os(2*d*x + 2*c) + 12*I*f^2*cos(d*x + c) - 12*f^2*sin(5*d*x + 5*c) - 12*I*f^
2*sin(4*d*x + 4*c) + 24*f^2*sin(3*d*x + 3*c) + 24*I*f^2*sin(2*d*x + 2*c) -
12*f^2*sin(d*x + c) - 12*f^2)*polylog(3, e^(I*d*x + I*c)) + (-16*I*(d*x + c
)^2*f^2 + (-32*I*d*e*f + 32*I*c*f^2)*(d*x + c))*sin(5*d*x + 5*c) + (4*(d*x
+ c)^2*f^2 + 8*I*d*e*f - 4*(3*c^2 + 2*I*c)*f^2 + (8*d*e*f - (8*c - 8*I)*f^2
)*(d*x + c))*sin(4*d*x + 4*c) + (20*I*(d*x + c)^2*f^2 - 8*d*e*f + (-12*I*c^
2 + 8*c)*f^2 - 8*(-5*I*d*e*f + (5*I*c + 1)*f^2)*(d*x + c))*sin(3*d*x + 3*c)
 - (12*(d*x + c)^2*f^2 + 8*I*d*e*f - 4*(5*c^2 + 2*I*c)*f^2 + (24*d*e*f - (2
4*c - 8*I)*f^2)*(d*x + c))*sin(2*d*x + 2*c) + (-12*I*(d*x + c)^2*f^2 + 8*d*
e*f + (4*I*c^2 - 8*c)*f^2 - 8*(3*I*d*e*f + (-3*I*c - 1)*f^2)*(d*x + c))*sin
(d*x + c))/(-4*I*a*d^2*cos(5*d*x + 5*c) + 4*a*d^2*cos(4*d*x + 4*c) + 8*I*a*
d^2*cos(3*d*x + 3*c) - 8*a*d^2*cos(2*d*x + 2*c) - 4*I*a*d^2*cos(d*x + c) +
4*a*d^2*sin(5*d*x + 5*c) + 4*I*a*d^2*sin(4*d*x + 4*c) - 8*a*d^2*sin(3*d*x +
 3*c) - 8*I*a*d^2*sin(2*d*x + 2*c) + 4*a*d^2*sin(d*x + c) + 4*a*d^2))/d
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sin(c + d*x)^3*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^2\csc^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{f^2x^2\csc^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{2efx\csc^3(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csc(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**2*csc(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(f**2*x**2*
csc(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(2*e*f*x*csc(c + d*x)**3/(
sin(c + d*x) + 1), x))/a
```

3.211 $\int \frac{(e+fx)\csc^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=216

$$\frac{3if\text{Li}_2\left(-e^{i(c+dx)}\right)}{2ad^2}-\frac{3if\text{Li}_2\left(e^{i(c+dx)}\right)}{2ad^2}-\frac{f\csc(c+dx)}{2ad^2}-\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}-\frac{f\log(\sin(c+dx))}{ad^2}+\frac{(e+fx)\cot}{}$$

```
[Out] -3*(f*x+e)*arctanh(exp(I*(d*x+c)))/a/d+(f*x+e)*cot(1/2*c+1/4*Pi+1/2*d*x)/a/
d+(f*x+e)*cot(d*x+c)/a/d-1/2*f*csc(d*x+c)/a/d^2-1/2*(f*x+e)*cot(d*x+c)*csc(
d*x+c)/a/d-2*f*ln(sin(1/2*c+1/4*Pi+1/2*d*x))/a/d^2-f*ln(sin(d*x+c))/a/d^2+3
/2*I*f*polylog(2,-exp(I*(d*x+c)))/a/d^2-3/2*I*f*polylog(2,exp(I*(d*x+c)))/a
/d^2
```

Rubi [A] time = 0.28, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4535, 4185, 4183, 2279, 2391, 4184, 3475, 3318}

$$\frac{3if\text{PolyLog}\left(2,-e^{i(c+dx)}\right)}{2ad^2}-\frac{3if\text{PolyLog}\left(2,e^{i(c+dx)}\right)}{2ad^2}-\frac{f\csc(c+dx)}{2ad^2}-\frac{2f\log\left(\sin\left(\frac{c}{2}+\frac{dx}{2}+\frac{\pi}{4}\right)\right)}{ad^2}-\frac{f\log(\sin(c+d}{ad^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csc[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-3*(e + f*x)*ArcTanh[E^(I*(c + d*x))])/(a*d) + ((e + f*x)*Cot[c/2 + Pi/4 +
 (d*x)/2])/(a*d) + ((e + f*x)*Cot[c + d*x])/(a*d) - (f*Csc[c + d*x])/(2*a*d
^2) - ((e + f*x)*Cot[c + d*x]*Csc[c + d*x])/(2*a*d) - (2*f*Log[Sin[c/2 + Pi
/4 + (d*x)/2]])/(a*d^2) - (f*Log[Sin[c + d*x]])/(a*d^2) + (((3*I)/2)*f*Poly
Log[2, -E^(I*(c + d*x))])/(a*d^2) - (((3*I)/2)*f*PolyLog[2, E^(I*(c + d*x))
])/(a*d^2)
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3318

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_.)
, x_Symbol] :> Dist[(2*a)^n, Int[(c + d*x)^m*Sin[(1*(e + (Pi*a)/(2*b)))/2 +
 (f*x)/2]^(2*n), x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[a^2 - b^2
, 0] && IntegerQ[n] && (GtQ[n, 0] || IGtQ[m, 0])
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rubi steps

$$\int \frac{(e+fx)\csc^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)\csc^3(c+dx)\,dx}{a} - \int \frac{(e+fx)\csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

$$= -\frac{f\csc(c+dx)}{2ad^2} - \frac{(e+fx)\cot(c+dx)\csc(c+dx)}{2ad} + \frac{\int (e+fx)\csc(c+dx)\,dx}{2a} - \int$$

$$= -\frac{(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)\cot(c+dx)}{ad} - \frac{f\csc(c+dx)}{2ad^2} - \frac{(e+fx)\cot(}{}$$

$$= -\frac{3(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)\cot(c+dx)}{ad} - \frac{f\csc(c+dx)}{2ad^2} - \frac{(e+fx)\cot}{}$$

$$= -\frac{3(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{(e+fx)\cot(c+dx)}{ad} -$$

$$= -\frac{3(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+fx)\cot\left(\frac{c}{2}+\frac{\pi}{4}+\frac{dx}{2}\right)}{ad} + \frac{(e+fx)\cot(c+dx)}{ad} -$$

Mathematica [B] time = 3.81, size = 484, normalized size = 2.24

$$\left(\sin\left(\tfrac{1}{2}(c+dx)\right)+\cos\left(\tfrac{1}{2}(c+dx)\right)\right)\left(-16d(e+fx)\sin\left(\tfrac{1}{2}(c+dx)\right)-d(e+fx)\left(\cot\left(\tfrac{1}{2}(c+dx)\right)+1\right)\csc\left(\tfrac{1}{2}(c+d\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Csc[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((Cos[(c + d*x)/2] + Sin[(c + d*x)/2])*(-(d*(e + f*x)*(1 + Cot[(c + d*x)/2]
)*Csc[(c + d*x)/2]) - 16*d*(e + f*x)*Sin[(c + d*x)/2] + 8*f*(c + d*x)*(Cos[
(c + d*x)/2] + Sin[(c + d*x)/2]) + 2*(-f + 2*d*(e + f*x))*Cot[(c + d*x)/2]*
(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) - 16*f*Log[Cos[(c + d*x)/2] + Sin[(c
+ d*x)/2]]*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) - 8*f*Log[Sin[c + d*x]]*(C
os[(c + d*x)/2] + Sin[(c + d*x)/2]) + 12*d*e*Log[Tan[(c + d*x)/2]]*(Cos[(c
+ d*x)/2] + Sin[(c + d*x)/2]) - 12*c*f*Log[Tan[(c + d*x)/2]]*(Cos[(c + d*x)
/2] + Sin[(c + d*x)/2]) + 12*f*((c + d*x)*(Log[1 - E^(I*(c + d*x))] - Log[1
 + E^(I*(c + d*x))]) + I*(PolyLog[2, -E^(I*(c + d*x))] - PolyLog[2, E^(I*(c
 + d*x))]))*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2]) - 2*(f + 2*d*(e + f*x))*(
Cos[(c + d*x)/2] + Sin[(c + d*x)/2])*Tan[(c + d*x)/2] + d*(e + f*x)*Sec[(c
+ d*x)/2]*(1 + Tan[(c + d*x)/2])))/(8*a*d^2*(1 + Sin[c + d*x]))
```

fricas [B] time = 0.58, size = 1355, normalized size = 6.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(8*(d*f*x + d*e)*cos(d*x + c)^3 - 4*d*f*x + 2*(3*d*f*x + 3*d*e - f)*cos
(d*x + c)^2 - 4*d*e - 6*(d*f*x + d*e)*cos(d*x + c) + (-3*I*f*cos(d*x + c)^3
 - 3*I*f*cos(d*x + c)^2 + 3*I*f*cos(d*x + c) + (-3*I*f*cos(d*x + c)^2 + 3*I
*f)*sin(d*x + c) + 3*I*f)*dilog(cos(d*x + c) + I*sin(d*x + c)) + (3*I*f*cos
(d*x + c)^3 + 3*I*f*cos(d*x + c)^2 - 3*I*f*cos(d*x + c) + (3*I*f*cos(d*x +
c)^2 - 3*I*f)*sin(d*x + c) - 3*I*f)*dilog(cos(d*x + c) - I*sin(d*x + c)) +
(-3*I*f*cos(d*x + c)^3 - 3*I*f*cos(d*x + c)^2 + 3*I*f*cos(d*x + c) + (-3*I*
f*cos(d*x + c)^2 + 3*I*f)*sin(d*x + c) + 3*I*f)*dilog(-cos(d*x + c) + I*sin
(d*x + c)) + (3*I*f*cos(d*x + c)^3 + 3*I*f*cos(d*x + c)^2 - 3*I*f*cos(d*x +
 c) + (3*I*f*cos(d*x + c)^2 - 3*I*f)*sin(d*x + c) - 3*I*f)*dilog(-cos(d*x +
 c) - I*sin(d*x + c)) - ((3*d*f*x + 3*d*e + 2*f)*cos(d*x + c)^3 - 3*d*f*x +
 (3*d*f*x + 3*d*e + 2*f)*cos(d*x + c)^2 - 3*d*e - (3*d*f*x + 3*d*e + 2*f)*c
os(d*x + c) - (3*d*f*x - (3*d*f*x + 3*d*e + 2*f)*cos(d*x + c)^2 + 3*d*e + 2
*f)*sin(d*x + c) - 2*f)*log(cos(d*x + c) + I*sin(d*x + c) + 1) - ((3*d*f*x
+ 3*d*e + 2*f)*cos(d*x + c)^3 - 3*d*f*x + (3*d*f*x + 3*d*e + 2*f)*cos(d*x +
 c)^2 - 3*d*e - (3*d*f*x + 3*d*e + 2*f)*cos(d*x + c) - (3*d*f*x - (3*d*f*x
+ 3*d*e + 2*f)*cos(d*x + c)^2 + 3*d*e + 2*f)*sin(d*x + c) - 2*f)*log(cos(d*
x + c) - I*sin(d*x + c) + 1) + ((3*d*e - (3*c + 2)*f)*cos(d*x + c)^3 + (3*d
*e - (3*c + 2)*f)*cos(d*x + c)^2 - 3*d*e + (3*c + 2)*f - (3*d*e - (3*c + 2)
*f)*cos(d*x + c) + ((3*d*e - (3*c + 2)*f)*cos(d*x + c)^2 - 3*d*e + (3*c + 2
)*f)*sin(d*x + c))*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) + ((3*
d*e - (3*c + 2)*f)*cos(d*x + c)^3 + (3*d*e - (3*c + 2)*f)*cos(d*x + c)^2 -
3*d*e + (3*c + 2)*f - (3*d*e - (3*c + 2)*f)*cos(d*x + c) + ((3*d*e - (3*c +
 2)*f)*cos(d*x + c)^2 - 3*d*e + (3*c + 2)*f)*sin(d*x + c))*log(-1/2*cos(d*x
 + c) - 1/2*I*sin(d*x + c) + 1/2) + 3*((d*f*x + c*f)*cos(d*x + c)^3 - d*f*x
 + (d*f*x + c*f)*cos(d*x + c)^2 - c*f - (d*f*x + c*f)*cos(d*x + c) - (d*f*x
 - (d*f*x + c*f)*cos(d*x + c)^2 + c*f)*sin(d*x + c))*log(-cos(d*x + c) + I*
sin(d*x + c) + 1) + 3*((d*f*x + c*f)*cos(d*x + c)^3 - d*f*x + (d*f*x + c*f)
*cos(d*x + c)^2 - c*f - (d*f*x + c*f)*cos(d*x + c) - (d*f*x - (d*f*x + c*f)
*cos(d*x + c)^2 + c*f)*sin(d*x + c))*log(-cos(d*x + c) - I*sin(d*x + c) + 1
) - 4*(f*cos(d*x + c)^3 + f*cos(d*x + c)^2 - f*cos(d*x + c) + (f*cos(d*x +
c)^2 - f)*sin(d*x + c) - f)*log(sin(d*x + c) + 1) + 2*(2*d*f*x - 4*(d*f*x +
 d*e)*cos(d*x + c)^2 + 2*d*e - (d*f*x + d*e - f)*cos(d*x + c) + f)*sin(d*x
+ c) + 2*f)/(a*d^2*cos(d*x + c)^3 + a*d^2*cos(d*x + c)^2 - a*d^2*cos(d*x +
c) - a*d^2 + (a*d^2*cos(d*x + c)^2 - a*d^2)*sin(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\csc\left(dx+c\right)^{3}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)*csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")

[Out] integrate((f*x + e)*csc(d*x + c)^3/(a*sin(d*x + c) + a), x)

maple [B] time = 0.39, size = 468, normalized size = 2.17

$$\frac{3dfx\,e^{4i(dx+c)}+3de\,e^{4i(dx+c)}-5dfx\,e^{2i(dx+c)}+3idfx\,e^{3i(dx+c)}-5de\,e^{2i(dx+c)}+f\,e^{3i(dx+c)}+3ide\,e^{3i(dx+c)}-if\,e^{4i(d}}{\left(e^{2i(dx+c)}-1\right)^{2}d^{2}\left(e^{i(dx+c)}+i\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f*x+e)*csc(d*x+c)^3/(a+a*sin(d*x+c)),x)

[Out] (3*d*f*x*exp(4*I*(d*x+c))+3*d*e*exp(4*I*(d*x+c))-5*d*f*x*exp(2*I*(d*x+c))+3*I*d*f*x*exp(3*I*(d*x+c))-5*d*e*exp(2*I*(d*x+c))+f*exp(3*I*(d*x+c))+3*I*d*e*exp(3*I*(d*x+c))-I*f*exp(4*I*(d*x+c))+4*d*f*x-I*d*f*x*exp(I*(d*x+c))+4*d*e-exp(I*(d*x+c))*f-I*d*e*exp(I*(d*x+c))+I*f*exp(2*I*(d*x+c)))/(exp(2*I*(d*x+c))-1)^2/d^2/(exp(I*(d*x+c))+I)/a-3/2*I*f*polylog(2,exp(I*(d*x+c)))/a/d^2+3/2*I*f*polylog(2,-exp(I*(d*x+c)))/a/d^2-3/2/a/d*e*ln(exp(I*(d*x+c))+1)+3/2/a/d*e*ln(exp(I*(d*x+c))-1)-3/2/a/d^2*f*c*ln(exp(I*(d*x+c))-1)-3/2/a/d*ln(exp(I*(d*x+c))+1)*f*x+3/2/a/d*ln(1-exp(I*(d*x+c)))*f*x+3/2/a/d^2*ln(1-exp(I*(d*x+c)))*c*f-2/a/d^2*f*ln(exp(I*(d*x+c))+I)+4/a/d^2*f*ln(exp(I*(d*x+c)))-1/a/d^2*f*ln(exp(I*(d*x+c))+1)-1/a/d^2*f*ln(exp(I*(d*x+c))-1)

maxima [B] time = 2.51, size = 2087, normalized size = 9.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)*csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")

[Out] (16*d*f*x*cos(5*d*x + 5*c) + 16*I*d*f*x*sin(5*d*x + 5*c) - 16*I*d*e - (8*f*cos(5*d*x + 5*c) + 8*I*f*cos(4*d*x + 4*c) - 16*f*cos(3*d*x + 3*c) - 16*I*f*cos(2*d*x + 2*c) + 8*f*cos(d*x + c) + 8*I*f*sin(5*d*x + 5*c) - 8*f*sin(4*d*x + 4*c) - 16*I*f*sin(3*d*x + 3*c) + 16*f*sin(2*d*x + 2*c) + 8*I*f*sin(d*x + c) + 8*I*f)*arctan2(cos(c) + sin(d*x), cos(d*x) + sin(c)) - (6*I*d*f*x + 6*I*d*e + 2*(3*d*f*x + 3*d*e + 2*f)*cos(5*d*x + 5*c) + (6*I*d*f*x + 6*I*d*e + 4*I*f)*cos(4*d*x + 4*c) - 4*(3*d*f*x + 3*d*e + 2*f)*cos(3*d*x + 3*c) + (-12*I*d*f*x - 12*I*d*e - 8*I*f)*cos(2*d*x + 2*c) + 2*(3*d*f*x + 3*d*e + 2*f)*cos(d*x + c) + (6*I*d*f*x + 6*I*d*e + 4*I*f)*sin(5*d*x + 5*c) - 2*(3*d*f*x + 3*d*e + 2*f)*sin(4*d*x + 4*c) + (-12*I*d*f*x - 12*I*d*e - 8*I*f)*sin(3*d*x + 3*c) + 4*(3*d*f*x + 3*d*e + 2*f)*sin(2*d*x + 2*c) + (6*I*d*f*x + 6*I*d*e + 4*I*f)*sin(d*x + c) + 4*I*f)*arctan2(sin(d*x + c), cos(d*x + c) + 1) - (-6*I*d*e - 2*(3*d*e - 2*f)*cos(5*d*x + 5*c) + (-6*I*d*e + 4*I*f)*cos(4*d*x + 4*c) + 4*(3*d*e - 2*f)*cos(3*d*x + 3*c) + (12*I*d*e - 8*I*f)*cos(2*d*x

```
 + 2*c) - 2*(3*d*e - 2*f)*cos(d*x + c) + (-6*I*d*e + 4*I*f)*sin(5*d*x + 5*c
) + 2*(3*d*e - 2*f)*sin(4*d*x + 4*c) + (12*I*d*e - 8*I*f)*sin(3*d*x + 3*c)
- 4*(3*d*e - 2*f)*sin(2*d*x + 2*c) + (-6*I*d*e + 4*I*f)*sin(d*x + c) + 4*I*
f)*arctan2(sin(d*x + c), cos(d*x + c) - 1) - (6*d*f*x*cos(5*d*x + 5*c) + 6*
I*d*f*x*cos(4*d*x + 4*c) - 12*d*f*x*cos(3*d*x + 3*c) - 12*I*d*f*x*cos(2*d*x
 + 2*c) + 6*d*f*x*cos(d*x + c) + 6*I*d*f*x*sin(5*d*x + 5*c) - 6*d*f*x*sin(4
*d*x + 4*c) - 12*I*d*f*x*sin(3*d*x + 3*c) + 12*d*f*x*sin(2*d*x + 2*c) + 6*I
*d*f*x*sin(d*x + c) + 6*I*d*f*x)*arctan2(sin(d*x + c), -cos(d*x + c) + 1) -
 (-4*I*d*f*x + 12*I*d*e + 4*f)*cos(4*d*x + 4*c) - (20*d*f*x - 12*d*e + 4*I*
f)*cos(3*d*x + 3*c) - (12*I*d*f*x - 20*I*d*e - 4*f)*cos(2*d*x + 2*c) + (12*
d*f*x - 4*d*e + 4*I*f)*cos(d*x + c) + (6*f*cos(5*d*x + 5*c) + 6*I*f*cos(4*d
*x + 4*c) - 12*f*cos(3*d*x + 3*c) - 12*I*f*cos(2*d*x + 2*c) + 6*f*cos(d*x +
 c) + 6*I*f*sin(5*d*x + 5*c) - 6*f*sin(4*d*x + 4*c) - 12*I*f*sin(3*d*x + 3*
c) + 12*f*sin(2*d*x + 2*c) + 6*I*f*sin(d*x + c) + 6*I*f)*dilog(-e^(I*d*x +
I*c)) - (6*f*cos(5*d*x + 5*c) + 6*I*f*cos(4*d*x + 4*c) - 12*f*cos(3*d*x + 3
*c) - 12*I*f*cos(2*d*x + 2*c) + 6*f*cos(d*x + c) + 6*I*f*sin(5*d*x + 5*c) -
 6*f*sin(4*d*x + 4*c) - 12*I*f*sin(3*d*x + 3*c) + 12*f*sin(2*d*x + 2*c) + 6
*I*f*sin(d*x + c) + 6*I*f)*dilog(e^(I*d*x + I*c)) - (3*d*f*x + 3*d*e + (-3*
I*d*f*x - 3*I*d*e - 2*I*f)*cos(5*d*x + 5*c) + (3*d*f*x + 3*d*e + 2*f)*cos(4
*d*x + 4*c) + (6*I*d*f*x + 6*I*d*e + 4*I*f)*cos(3*d*x + 3*c) - 2*(3*d*f*x +
 3*d*e + 2*f)*cos(2*d*x + 2*c) + (-3*I*d*f*x - 3*I*d*e - 2*I*f)*cos(d*x + c
) + (3*d*f*x + 3*d*e + 2*f)*sin(5*d*x + 5*c) + (3*I*d*f*x + 3*I*d*e + 2*I*f
)*sin(4*d*x + 4*c) - 2*(3*d*f*x + 3*d*e + 2*f)*sin(3*d*x + 3*c) + (-6*I*d*f
*x - 6*I*d*e - 4*I*f)*sin(2*d*x + 2*c) + (3*d*f*x + 3*d*e + 2*f)*sin(d*x +
c) + 2*f)*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*cos(d*x + c) + 1) + (3*d*
f*x + 3*d*e - (3*I*d*f*x + 3*I*d*e - 2*I*f)*cos(5*d*x + 5*c) + (3*d*f*x + 3
*d*e - 2*f)*cos(4*d*x + 4*c) - (-6*I*d*f*x - 6*I*d*e + 4*I*f)*cos(3*d*x + 3
*c) - 2*(3*d*f*x + 3*d*e - 2*f)*cos(2*d*x + 2*c) - (3*I*d*f*x + 3*I*d*e - 2
*I*f)*cos(d*x + c) + (3*d*f*x + 3*d*e - 2*f)*sin(5*d*x + 5*c) - (-3*I*d*f*x
 - 3*I*d*e + 2*I*f)*sin(4*d*x + 4*c) - 2*(3*d*f*x + 3*d*e - 2*f)*sin(3*d*x
+ 3*c) - (6*I*d*f*x + 6*I*d*e - 4*I*f)*sin(2*d*x + 2*c) + (3*d*f*x + 3*d*e
- 2*f)*sin(d*x + c) - 2*f)*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*cos(d*x
+ c) + 1) - (-4*I*f*cos(5*d*x + 5*c) + 4*f*cos(4*d*x + 4*c) + 8*I*f*cos(3*d
*x + 3*c) - 8*f*cos(2*d*x + 2*c) - 4*I*f*cos(d*x + c) + 4*f*sin(5*d*x + 5*c
) + 4*I*f*sin(4*d*x + 4*c) - 8*f*sin(3*d*x + 3*c) - 8*I*f*sin(2*d*x + 2*c)
+ 4*f*sin(d*x + c) + 4*f)*log(cos(d*x)^2 + cos(c)^2 + 2*cos(c)*sin(d*x) + s
in(d*x)^2 + 2*cos(d*x)*sin(c) + sin(c)^2) - (4*d*f*x - 12*d*e + 4*I*f)*sin(
4*d*x + 4*c) - (20*I*d*f*x - 12*I*d*e - 4*f)*sin(3*d*x + 3*c) + (12*d*f*x -
 20*d*e + 4*I*f)*sin(2*d*x + 2*c) - (-12*I*d*f*x + 4*I*d*e + 4*f)*sin(d*x +
 c))/(-4*I*a*d^2*cos(5*d*x + 5*c) + 4*a*d^2*cos(4*d*x + 4*c) + 8*I*a*d^2*co
s(3*d*x + 3*c) - 8*a*d^2*cos(2*d*x + 2*c) - 4*I*a*d^2*cos(d*x + c) + 4*a*d^
2*sin(5*d*x + 5*c) + 4*I*a*d^2*sin(4*d*x + 4*c) - 8*a*d^2*sin(3*d*x + 3*c)
- 8*I*a*d^2*sin(2*d*x + 2*c) + 4*a*d^2*sin(d*x + c) + 4*a*d^2)
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sin(c + d*x)^3*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e\csc^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{fx\csc^3(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e*csc(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(f*x*csc(c + d
*x)**3/(sin(c + d*x) + 1), x))/a
```

3.212 $\int \frac{\csc^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=82

$$\frac{2\cot(c+dx)}{ad}-\frac{3\tanh^{-1}(\cos(c+dx))}{2ad}-\frac{3\cot(c+dx)\csc(c+dx)}{2ad}+\frac{\cot(c+dx)\csc(c+dx)}{d(a\sin(c+dx)+a)}$$

```
[Out] -3/2*arctanh(cos(d*x+c))/a/d+2*cot(d*x+c)/a/d-3/2*cot(d*x+c)*csc(d*x+c)/a/d
+cot(d*x+c)*csc(d*x+c)/d/(a+a*sin(d*x+c))
```

Rubi [A] time = 0.09, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2768, 2748, 3768, 3770, 3767, 8}

$$\frac{2\cot(c+dx)}{ad}-\frac{3\tanh^{-1}(\cos(c+dx))}{2ad}-\frac{3\cot(c+dx)\csc(c+dx)}{2ad}+\frac{\cot(c+dx)\csc(c+dx)}{d(a\sin(c+dx)+a)}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[c + d*x]^3/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-3*ArcTanh[Cos[c + d*x]])/(2*a*d) + (2*Cot[c + d*x])/(a*d) - (3*Cot[c + d*
x]*Csc[c + d*x])/(2*a*d) + (Cot[c + d*x]*Csc[c + d*x])/(d*(a + a*Sin[c + d*
x]))
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2748

```
Int[((b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_) + (d_.)*sin[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Dist[c, Int[(b*Sin[e + f*x])^m, x], x] + Dist[d/b, Int[(
b*Sin[e + f*x])^(m + 1), x], x] /; FreeQ[{b, c, d, e, f, m}, x]
```

Rule 2768

```
Int[((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)/((a_) + (b_.)*sin[(e_.) +
(f_.)*(x_)]), x_Symbol] :> -Simp[(b^2*Cos[e + f*x]*(c + d*Sin[e + f*x])^(n
+ 1))/(a*f*(b*c - a*d)*(a + b*Sin[e + f*x])), x] + Dist[d/(a*(b*c - a*d)),
Int[(c + d*Sin[e + f*x])^n*(a*n - b*(n + 1)*Sin[e + f*x]), x], x] /; FreeQ[
{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0] && EqQ[a^2 - b^2, 0] && NeQ[c^2
 - d^2, 0] && LtQ[n, 0] && (IntegerQ[2*n] || EqQ[c, 0])
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 3768

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Csc[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[(b^2*(n - 2))/(n - 1), I
nt[(b*Csc[c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] &&
IntegerQ[2*n]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\csc^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\cot(c+dx)\csc(c+dx)}{d(a+a\sin(c+dx))} - \frac{\int \csc^3(c+dx)(-3a+2a\sin(c+dx))\,dx}{a^2}$$
$$= \frac{\cot(c+dx)\csc(c+dx)}{d(a+a\sin(c+dx))} - \frac{2\int \csc^2(c+dx)\,dx}{a} + \frac{3\int \csc^3(c+dx)\,dx}{a}$$
$$= -\frac{3\cot(c+dx)\csc(c+dx)}{2ad} + \frac{\cot(c+dx)\csc(c+dx)}{d(a+a\sin(c+dx))} + \frac{3\int \csc(c+dx)\,dx}{2a} + \frac{2\,\text{Subst}(}{}$$
$$= -\frac{3\tanh^{-1}(\cos(c+dx))}{2ad} + \frac{2\cot(c+dx)}{ad} - \frac{3\cot(c+dx)\csc(c+dx)}{2ad} + \frac{\cot(c+dx)\,\text{csc}}{d(a+a\sin(c}$$

Mathematica [A] time = 0.55, size = 85, normalized size = 1.04

$$-\frac{4\tan(c+dx) - 4\csc(2(c+dx)) - 3\sec(c+dx) + \csc^2(c+dx)\sec(c+dx) + 3\sqrt{\cos^2(c+dx)}\,\sec(c+dx)\,\text{tanh}}{2ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[c + d*x]^3/(a + a*Sin[c + d*x]),x]
```

```
[Out] -1/2*(-4*Csc[2*(c + d*x)] - 3*Sec[c + d*x] + 3*ArcTanh[Sqrt[Cos[c + d*x]^2]
]*Sqrt[Cos[c + d*x]^2]*Sec[c + d*x] + Csc[c + d*x]^2*Sec[c + d*x] + 4*Tan[c
 + d*x])/(a*d)
```

fricas [B] time = 0.49, size = 232, normalized size = 2.83

$$\frac{8\cos(dx+c)^3+6\cos(dx+c)^2-3\left(\cos(dx+c)^3+\cos(dx+c)^2+\left(\cos(dx+c)^2-1\right)\sin(dx+c)-\cos(dx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(8*cos(d*x + c)^3 + 6*cos(d*x + c)^2 - 3*(cos(d*x + c)^3 + cos(d*x + c)
^2 + (cos(d*x + c)^2 - 1)*sin(d*x + c) - cos(d*x + c) - 1)*log(1/2*cos(d*x
+ c) + 1/2) + 3*(cos(d*x + c)^3 + cos(d*x + c)^2 + (cos(d*x + c)^2 - 1)*sin
(d*x + c) - cos(d*x + c) - 1)*log(-1/2*cos(d*x + c) + 1/2) - 2*(4*cos(d*x +
 c)^2 + cos(d*x + c) - 2)*sin(d*x + c) - 6*cos(d*x + c) - 4)/(a*d*cos(d*x +
 c)^3 + a*d*cos(d*x + c)^2 - a*d*cos(d*x + c) - a*d + (a*d*cos(d*x + c)^2 -
 a*d)*sin(d*x + c))
```

giac [A] time = 0.66, size = 112, normalized size = 1.37

$$\frac{\frac{12\log\left(\left|\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)\right|\right)}{a}+\frac{a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2-4a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)}{a^2}+\frac{16}{a\left(\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+1\right)}-\frac{18\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2-4\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+1}{a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2}}{8d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/8*(12*log(abs(tan(1/2*d*x + 1/2*c)))/a + (a*tan(1/2*d*x + 1/2*c)^2 - 4*a*
tan(1/2*d*x + 1/2*c))/a^2 + 16/(a*(tan(1/2*d*x + 1/2*c) + 1)) - (18*tan(1/2
*d*x + 1/2*c)^2 - 4*tan(1/2*d*x + 1/2*c) + 1)/(a*tan(1/2*d*x + 1/2*c)^2))/d
```

maple [A] time = 0.11, size = 115, normalized size = 1.40

$$\frac{\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)}{8ad}-\frac{\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}{2ad}-\frac{1}{8ad\tan\left(\frac{dx}{2}+\frac{c}{2}\right)^2}+\frac{1}{2ad\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}+\frac{3\ln\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{2ad}+\frac{2}{ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] 1/8/a/d*tan(1/2*d*x+1/2*c)^2-1/2/a/d*tan(1/2*d*x+1/2*c)-1/8/a/d/tan(1/2*d*x
+1/2*c)^2+1/2/a/d/tan(1/2*d*x+1/2*c)+3/2/a/d*ln(tan(1/2*d*x+1/2*c))+2/a/d/(
tan(1/2*d*x+1/2*c)+1)
```

maxima [B] time = 0.57, size = 157, normalized size = 1.91

$$-\frac{\frac{\frac{4\,\sin(dx+c)}{\cos(dx+c)+1}-\frac{\sin(dx+c)^2}{(\cos(dx+c)+1)^2}}{a}-\frac{\frac{3\,\sin(dx+c)}{\cos(dx+c)+1}+\frac{20\,\sin(dx+c)^2}{(\cos(dx+c)+1)^2}-1}{\frac{a\sin(dx+c)^2}{(\cos(dx+c)+1)^2}+\frac{a\sin(dx+c)^3}{(\cos(dx+c)+1)^3}}-\frac{12\,\log\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{a}}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/8*((4*sin(d*x + c)/(cos(d*x + c) + 1) - sin(d*x + c)^2/(cos(d*x + c) + 1
)^2)/a - (3*sin(d*x + c)/(cos(d*x + c) + 1) + 20*sin(d*x + c)^2/(cos(d*x +
c) + 1)^2 - 1)/(a*sin(d*x + c)^2/(cos(d*x + c) + 1)^2 + a*sin(d*x + c)^3/(c
os(d*x + c) + 1)^3) - 12*log(sin(d*x + c)/(cos(d*x + c) + 1))/a)/d
```

mupad [B] time = 1.39, size = 116, normalized size = 1.41

$$\frac{\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^2}{8\,a\,d}+\frac{3\,\ln\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right)}{2\,a\,d}-\frac{\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{2\,a\,d}+\frac{10\,\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^2+\frac{3\,\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{2}-\frac{1}{2}}{d\,\left(4\,a\,\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^3+4\,a\,\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(c + d*x)^3*(a + a*sin(c + d*x))),x)
```

```
[Out] tan(c/2 + (d*x)/2)^2/(8*a*d) + (3*log(tan(c/2 + (d*x)/2)))/(2*a*d) - tan(c/
2 + (d*x)/2)/(2*a*d) + ((3*tan(c/2 + (d*x)/2))/2 + 10*tan(c/2 + (d*x)/2)^2
- 1/2)/(d*(4*a*tan(c/2 + (d*x)/2)^2 + 4*a*tan(c/2 + (d*x)/2)^3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\csc^3(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)**3/(sin(c + d*x) + 1), x)/a
```

3.213 $\int \frac{\csc^3(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\csc^3(c+dx)}{(e+fx)(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(csc(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc^3(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Csc[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\csc^3(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx = \int \frac{\csc^3(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 83.94, size = 0, normalized size = 0.00

$$\int \frac{\csc^3(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Csc[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\csc(dx+c)^3}{afx+ae+\left(afx+ae\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral(csc(d*x + c)^3/(a*f*x + a*e + (a*f*x + a*e)*sin(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [A] time = 10.85, size = 0, normalized size = 0.00

$$\int \frac{\csc^{3}\left(dx+c\right)}{\left(fx+e\right)\left(a+a\sin\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x)
[Out] int(csc(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\sin\left(c+d\,x\right)^{3}\,\left(e+f\,x\right)\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(c + d*x)^3*(e + f*x)*(a + a*sin(c + d*x))),x)
[Out] int(1/(sin(c + d*x)^3*(e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\csc^{3}\left(c+dx\right)}{e\sin\left(c+dx\right)+e+fx\sin\left(c+dx\right)+fx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)**3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)**3/(e*sin(c + d*x) + e + f*x*sin(c + d*x) + f*x), x)/
a
```

3.214 $\int \frac{\csc^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\csc^3(c+dx)}{(e+fx)^2(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(csc(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\csc^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Csc[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
[Out] Defer[Int][Csc[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\csc^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx = \int \frac{\csc^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 176.78, size = 0, normalized size = 0.00

$$\int \frac{\csc^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Csc[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
[Out] Integrate[Csc[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\csc(dx+c)^3}{af^2x^2+2\,aefx+ae^2+\left(af^2x^2+2\,aefx+ae^2\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(csc(d*x + c)^3/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2 + 2*a*e
*f*x + a*e^2)*sin(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 12.50, size = 0, normalized size = 0.00

$$\int \frac{\csc^{3}\left(dx+c\right)}{\left(fx+e\right)^{2}\left(a+a\sin\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int(csc(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\sin\left(c+d\,x\right)}^3\,{\left(e+f\,x\right)}^2\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(c + d*x)^3*(e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(1/(sin(c + d*x)^3*(e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\csc^3(c+dx)}{e^2\sin(c+dx)+e^2+2efx\sin(c+dx)+2efx+f^2x^2\sin(c+dx)+f^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)**3/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)**3/(e**2*sin(c + d*x) + e**2 + 2*e*f*x*sin(c + d*x) +
 2*e*f*x + f**2*x**2*sin(c + d*x) + f**2*x**2), x)/a
```

3.215 $\int \frac{(e+fx)^m \sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sin^2(c+dx)(e+fx)^m}{a\sin(c+dx)+a},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*sin(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Sin[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
[Out] Defer[Int][((e + f*x)^m*Sin[c + d*x]^2)/(a + a*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \sin^2(c+dx)}{a+a\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

Mathematica [A] time = 8.75, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \sin^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Sin[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
[Out] Integrate[((e + f*x)^m*Sin[c + d*x]^2)/(a + a*Sin[c + d*x]), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(\cos(dx+c)^2-1\right)\left(fx+e\right)^m}{a\sin(dx+c)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral(-(cos(d*x + c)^2 - 1)*(f*x + e)^m/(a*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m \sin\left(dx+c\right)^2}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*sin(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.51, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m \left(\sin^2\left(dx+c\right)\right)}{a+a\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*sin(d*x+c)^2/(a+a*sin(d*x+c)),x)
[Out] int((f*x+e)^m*sin(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m \sin\left(dx+c\right)^2}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*sin(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sin\left(c+d\,x\right)^2 \left(e+f\,x\right)^m}{a+a\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^2*(e + f*x)^m)/(a + a*sin(c + d*x)),x)
[Out] int((sin(c + d*x)^2*(e + f*x)^m)/(a + a*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(e+fx)^m \sin^2(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*sin(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m*sin(c + d*x)**2/(sin(c + d*x) + 1), x)/a
```

3.216 $\int \frac{(e+fx)^m \sin(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=29

$$\operatorname{Int}\left(\frac{\sin(c+dx)(e+fx)^m}{a\sin(c+dx)+a},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*sin(d*x+c)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \sin(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Sin[c + d*x])/(a + a*Sin[c + d*x]),x]
[Out] Defer[Int][((e + f*x)^m*Sin[c + d*x])/(a + a*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \sin(c+dx)}{a+a\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \sin(c+dx)}{a+a\sin(c+dx)}\,dx$$

Mathematica [A] time = 1.86, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \sin(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Sin[c + d*x])/(a + a*Sin[c + d*x]),x]
[Out] Integrate[((e + f*x)^m*Sin[c + d*x])/(a + a*Sin[c + d*x]), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\left(fx+e\right)^m \sin\left(dx+c\right)}{a\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*sin(d*x + c)/(a*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m \sin\left(dx+c\right)}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*sin(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m \sin\left(dx+c\right)}{a+a\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*sin(d*x+c)/(a+a*sin(d*x+c)),x)
[Out] int((f*x+e)^m*sin(d*x+c)/(a+a*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m \sin\left(dx+c\right)}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*sin(d*x + c)/(a*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sin\left(c+d\,x\right)\,{\left(e+f\,x\right)}^m}{a+a\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x)^m)/(a + a*sin(c + d*x)),x)
[Out] int((sin(c + d*x)*(e + f*x)^m)/(a + a*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(e+fx)^m \sin(c+dx)}{\sin(c+dx)+1}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*sin(d*x+c)/(a+a*sin(d*x+c)),x)
[Out] Integral((e + f*x)**m*sin(c + d*x)/(sin(c + d*x) + 1), x)/a
```

3.217 $\int \frac{(e+fx)^m}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=23

$$\operatorname{Int}\left(\frac{(e+fx)^m}{a\sin(c+dx)+a},x\right)$$

```
[Out] Unintegrable((f*x+e)^m/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(e + f*x)^m/(a + a*Sin[c + d*x]),x]
```

```
[Out] Defer[Int][(e + f*x)^m/(a + a*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m}{a+a\sin(c+dx)}\,dx=\int \frac{(e+fx)^m}{a+a\sin(c+dx)}\,dx$$

Mathematica [A] time = 0.79, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(e + f*x)^m/(a + a*Sin[c + d*x]),x]
```

```
[Out] Integrate[(e + f*x)^m/(a + a*Sin[c + d*x]), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\left(fx+e\right)^m}{a\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m/(a*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m}{a+a\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m/(a+a*sin(d*x+c)),x)
[Out] int((f*x+e)^m/(a+a*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m/(a*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\left(e+f\,x\right)^m}{a+a\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(a + a*sin(c + d*x)),x)
[Out] int((e + f*x)^m/(a + a*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\left(e+fx\right)^{m}}{\sin\left(c+dx\right)+1}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m/(sin(c + d*x) + 1), x)/a
```

3.218 $\int \frac{(e+fx)^m \csc(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=29

$$\mathrm{Int}\left(\frac{\csc(c+dx)(e+fx)^m}{a\sin(c+dx)+a},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m\csc(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Csc[c + d*x])/(a + a*Sin[c + d*x]),x]
[Out] Defer[Int][((e + f*x)^m*Csc[c + d*x])/(a + a*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m\csc(c+dx)}{a+a\sin(c+dx)}\,dx=\int \frac{(e+fx)^m\csc(c+dx)}{a+a\sin(c+dx)}\,dx$$

Mathematica [A] time = 37.19, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m\csc(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Csc[c + d*x])/(a + a*Sin[c + d*x]),x]
[Out] Integrate[((e + f*x)^m*Csc[c + d*x])/(a + a*Sin[c + d*x]), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(fx+e\right)^m\csc\left(dx+c\right)}{a\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*csc(d*x + c)/(a*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\csc\left(dx+c\right)}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*csc(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\csc\left(dx+c\right)}{a+a\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*csc(d*x+c)/(a+a*sin(d*x+c)),x)
[Out] int((f*x+e)^m*csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\csc\left(dx+c\right)}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*csc(d*x + c)/(a*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{{\left(e+f\,x\right)}^m}{\sin\left(c+d\,x\right)\,\left(a+a\,\sin\left(c+d\,x\right)\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(sin(c + d*x)*(a + a*sin(c + d*x))),x)
[Out] int((e + f*x)^m/(sin(c + d*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(e+fx)^m \csc(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*csc(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m*csc(c + d*x)/(sin(c + d*x) + 1), x)/a
```

3.219 $\int \frac{(e+fx)^m \csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\csc^2(c+dx)(e+fx)^m}{a\sin(c+dx)+a},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*csc(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Csc[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
[Out] Defer[Int][((e + f*x)^m*Csc[c + d*x]^2)/(a + a*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \csc^2(c+dx)}{a+a\sin(c+dx)}\,dx=\int \frac{(e+fx)^m \csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

Mathematica [A] time = 34.77, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \csc^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Csc[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
[Out] Integrate[((e + f*x)^m*Csc[c + d*x]^2)/(a + a*Sin[c + d*x]), x]
```

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^m \csc\left(dx+c\right)^2}{a\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*csc(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \csc(dx+c)^2}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*csc(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.17, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \left(\csc^2(dx+c)\right)}{a+a\sin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*csc(d*x+c)^2/(a+a*sin(d*x+c)),x)
[Out] int((f*x+e)^m*csc(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \csc(dx+c)^2}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*csc(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(e+f\,x)^m}{\sin(c+d\,x)^2\,(a+a\,\sin(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(sin(c + d*x)^2*(a + a*sin(c + d*x))),x)
[Out] int((e + f*x)^m/(sin(c + d*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(e+fx)^m \csc^2(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*csc(d*x+c)**2/(a+a*sin(d*x+c)),x)
[Out] Integral((e + f*x)**m*csc(c + d*x)**2/(sin(c + d*x) + 1), x)/a
```

3.220 $\int \frac{(e+fx)^3 \sin(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=544

$$-\frac{6af^3\text{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^4\sqrt{a^2-b^2}}+\frac{6af^3\text{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^4\sqrt{a^2-b^2}}+\frac{6iaf^2(e+fx)\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}-\frac{6iaf^2(e+fx)\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}+\frac{3af(e}{}$$

```
[Out] 1/4*(f*x+e)^4/b/f+I*a*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2))
)/b/d/(a^2-b^2)^(1/2)-I*a*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1
/2)))/b/d/(a^2-b^2)^(1/2)+3*a*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(
a^2-b^2)^(1/2)))/b/d^2/(a^2-b^2)^(1/2)-3*a*f*(f*x+e)^2*polylog(2,I*b*exp(I*
(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^2/(a^2-b^2)^(1/2)+6*I*a*f^2*(f*x+e)*polyl
og(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)^(1/2)-6*I*a*f^
2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)
^(1/2)-6*a*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^4/(a^2
-b^2)^(1/2)+6*a*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^4
/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.97, antiderivative size = 544, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {4515, 32, 3323, 2264, 2190, 2531, 6609, 2282, 6589}

$$\frac{6iaf^2(e+fx)\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}-\frac{6iaf^2(e+fx)\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^3\sqrt{a^2-b^2}}+\frac{3af(e+fx)^2\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right.}{bd^2\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sin[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (e + f*x)^4/(4*b*f) + (I*a*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a - S
qrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d) - (I*a*(e + f*x)^3*Log[1 - (I*b*E^(
I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d) + (3*a*f*(e + f
*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*Sqrt[a^2
- b^2]*d^2) - (3*a*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt
[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^2) + ((6*I)*a*f^2*(e + f*x)*PolyLog[3,
(I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^3) - ((6
*I)*a*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])]
)/(b*Sqrt[a^2 - b^2]*d^3) - (6*a*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a -
Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^4) + (6*a*f^3*PolyLog[4, (I*b*E^(I*
(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^4)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\sin(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\,dx}{b} - \frac{a\int \frac{(e+fx)^3}{a+b\sin(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)^4}{4bf} - \frac{(2a)\int \frac{e^{i(c+dx)}(e+fx)^3}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b}$$

$$= \frac{(e+fx)^4}{4bf} + \frac{(2ia)\int \frac{e^{i(c+dx)}(e+fx)^3}{2a-2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\sqrt{a^2-b^2}} - \frac{(2ia)\int \frac{e^{i(c+dx)}(e+fx)^3}{2a+2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\sqrt{a^2-b^2}}$$

$$= \frac{(e+fx)^4}{4bf} + \frac{ia(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{(3ia}{}$$

$$= \frac{(e+fx)^4}{4bf} + \frac{ia(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} + \frac{3af}{}$$

$$= \frac{(e+fx)^4}{4bf} + \frac{ia(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} + \frac{3af}{}$$

$$= \frac{(e+fx)^4}{4bf} + \frac{ia(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} + \frac{3af}{}$$

$$= \frac{(e+fx)^4}{4bf} + \frac{ia(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} + \frac{3af}{}$$

Mathematica [A] time = 3.62, size = 956, normalized size = 1.76

$$\frac{x\left(4e^3+6fxe^2+4f^2x^2e+f^3x^3\right)}{4b} - \frac{a\left(2\sqrt{b^2-a^2}\,e^3\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right)d^3+\sqrt{a^2-b^2}\,f^3x^3\log\left(1-\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)d^3+3\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sin[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3))/(4*b) - (a*(2*Sqrt[-a^2 + b
^2]*d^3*e^3*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + 3*Sqrt[a^2
- b^2]*d^3*e^2*f*x*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])]
 + 3*Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sq
rt[-a^2 + b^2])] + Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log[1 - (b*E^(I*(c + d*x)))/
```

```
((-I)*a + Sqrt[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d^3*e^2*f*x*Log[1 + (b*E^(
I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*L
og[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - Sqrt[a^2 - b^2]*d^3*
f^3*x^3*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - (3*I)*Sqrt[
a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[
-a^2 + b^2])] + (3*I)*Sqrt[a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(
I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] + 6*Sqrt[a^2 - b^2]*d*e*f^2*PolyLo
g[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 6*Sqrt[a^2 - b^2]*d
*f^3*x*PolyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 6*Sqrt
[a^2 - b^2]*d*e*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2
]))] - 6*Sqrt[a^2 - b^2]*d*f^3*x*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sq
rt[-a^2 + b^2]))] + (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, (b*E^(I*(c + d*x))
)/((-I)*a + Sqrt[-a^2 + b^2])] - (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, -((b*
E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))]))/(b*Sqrt[-(a^2 - b^2)^2]*d^4)
```

fricas [C] time = 0.67, size = 2342, normalized size = 4.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*((a^2 - b^2)*d^4*f^3*x^4 + 4*(a^2 - b^2)*d^4*e*f^2*x^3 + 6*(a^2 - b^2)*
d^4*e^2*f*x^2 + 4*(a^2 - b^2)*d^4*e^3*x + 12*I*a*b*f^3*sqrt(-(a^2 - b^2)/b^
2)*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c
) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*I*a*b*f^3*sqrt(-(a^2
- b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*I*a*b*f^3*sq
rt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c)
 + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*I*
a*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*si
n(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/
b) - 2*(3*I*a*b*d^2*f^3*x^2 + 6*I*a*b*d^2*e*f^2*x + 3*I*a*b*d^2*e^2*f)*sqrt
(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b
*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*
(-3*I*a*b*d^2*f^3*x^2 - 6*I*a*b*d^2*e*f^2*x - 3*I*a*b*d^2*e^2*f)*sqrt(-(a^2
 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d
*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(-3*I*
a*b*d^2*f^3*x^2 - 6*I*a*b*d^2*e*f^2*x - 3*I*a*b*d^2*e^2*f)*sqrt(-(a^2 - b^2
)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x +
c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(3*I*a*b*d^
2*f^3*x^2 + 6*I*a*b*d^2*e*f^2*x + 3*I*a*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)
*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I
*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(a*b*d^3*e^3 - 3*
a*b*c*d^2*e^2*f + 3*a*b*c^2*d*e*f^2 - a*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*l
```

```
og(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I
*a) - 2*(a*b*d^3*e^3 - 3*a*b*c*d^2*e^2*f + 3*a*b*c^2*d*e*f^2 - a*b*c^3*f^3)
*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqr
t(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(a*b*d^3*e^3 - 3*a*b*c*d^2*e^2*f + 3*a*b*c
^2*d*e*f^2 - a*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*
I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*(a*b*d^3*e^3 - 3
*a*b*c*d^2*e^2*f + 3*a*b*c^2*d*e*f^2 - a*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*
log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2
*I*a) - 2*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + 3*a*
b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log
(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*
e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b
*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x
+ c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/
b) - 2*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + 3*a*b*d^3*e^2*f*x + 3*a*b*c
*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/
2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*
f^2*x^2 + 3*a*b*d^3*e^2*f*x + 3*a*b*c*d^2*e^2*f - 3*a*b*c^2*d*e*f^2 + a*b*c
^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x +
 c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
) + 12*(a*b*d*f^3*x + a*b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2
*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2))/b) - 12*(a*b*d*f^3*x + a*b*d*e*f^2)*sqrt(-(a^2 -
b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(
d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(a*b*d*f^3*x +
 a*b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) -
2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/
b^2))/b) - 12*(a*b*d*f^3*x + a*b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3,
 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(
d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b))/((a^2*b - b^3)*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sin\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sin(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [F] time = 1.41, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \sin \left(dx+c\right)}{a+b \sin \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sin \left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{a+b\,\sin \left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] int((sin(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.221 $\int \frac{(e+fx)^2 \sin(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=408

$$\frac{2iaf^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}-\frac{2iaf^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}+\frac{2af(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}-\frac{2af(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}+\frac{ia(e+fx)^2}{bd}$$

```
[Out] 1/3*(f*x+e)^3/b/f+I*a*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2))
)/b/d/(a^2-b^2)^(1/2)-I*a*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1
/2)))/b/d/(a^2-b^2)^(1/2)+2*a*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^
2-b^2)^(1/2)))/b/d^2/(a^2-b^2)^(1/2)-2*a*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x
+c))/(a+(a^2-b^2)^(1/2)))/b/d^2/(a^2-b^2)^(1/2)+2*I*a*f^2*polylog(3,I*b*exp
(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)^(1/2)-2*I*a*f^2*polylog(3,
I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.86, antiderivative size = 408, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4515, 32, 3323, 2264, 2190, 2531, 2282, 6589}

$$\frac{2af(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}-\frac{2af(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^2\sqrt{a^2-b^2}}+\frac{2iaf^2\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}-\frac{2iaf^2\text{Pol}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sin[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (e + f*x)^3/(3*b*f) + (I*a*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - S
qrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d) - (I*a*(e + f*x)^2*Log[1 - (I*b*E^(
I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d) + (2*a*f*(e + f
*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 -
b^2]*d^2) - (2*a*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2
 - b^2])])/(b*Sqrt[a^2 - b^2]*d^2) + ((2*I)*a*f^2*PolyLog[3, (I*b*E^(I*(c +
 d*x)))/(a - Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^3) - ((2*I)*a*f^2*Poly
Log[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^3
)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\sin(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\,dx}{b} - \frac{a\int \frac{(e+fx)^2}{a+b\sin(c+dx)}\,dx}{b}$$

$$= \frac{(e+fx)^3}{3bf} - \frac{(2a)\int \frac{e^{i(c+dx)}(e+fx)^2}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b}$$

$$= \frac{(e+fx)^3}{3bf} + \frac{(2ia)\int \frac{e^{i(c+dx)}(e+fx)^2}{2a-2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\sqrt{a^2-b^2}} - \frac{(2ia)\int \frac{e^{i(c+dx)}(e+fx)^2}{2a+2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\sqrt{a^2-b^2}}$$

$$= \frac{(e+fx)^3}{3bf} + \frac{ia(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - (2ia$$

$$= \frac{(e+fx)^3}{3bf} + \frac{ia(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} + 2af$$

$$= \frac{(e+fx)^3}{3bf} + \frac{ia(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} + 2af$$

$$= \frac{(e+fx)^3}{3bf} + \frac{ia(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} + 2af$$

Mathematica [A] time = 2.29, size = 445, normalized size = 1.09

$$\frac{x\left(3e^2+3efx+f^2x^2\right)}{3b} - \frac{ia\left(-i\left(d^2\left(2e^2\sqrt{b^2-a^2}\,\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right)+fx\sqrt{a^2-b^2}\,(2e+fx)\left(\log\left(1-\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)-\right.\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sin[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (x*(3*e^2 + 3*e*f*x + f^2*x^2))/(3*b) - (I*a*(-2*Sqrt[a^2 - b^2]*d*f*(e + f
*x)*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 2*Sqrt[a^
2 - b^2]*d*f*(e + f*x)*PolyLog[2, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 +
b^2]))] - I*(d^2*(2*Sqrt[-a^2 + b^2]*e^2*ArcTan[(I*a + b*E^(I*(c + d*x)))/S
qrt[a^2 - b^2]] + Sqrt[a^2 - b^2]*f*x*(2*e + f*x)*(Log[1 - (b*E^(I*(c + d*x
)))/((-I)*a + Sqrt[-a^2 + b^2])] - Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[
-a^2 + b^2])])) + 2*Sqrt[a^2 - b^2]*f^2*PolyLog[3, (b*E^(I*(c + d*x)))/((-I
)*a + Sqrt[-a^2 + b^2])] - 2*Sqrt[a^2 - b^2]*f^2*PolyLog[3, -((b*E^(I*(c +
d*x)))/(I*a + Sqrt[-a^2 + b^2]))])))/(b*Sqrt[-(a^2 - b^2)^2]*d^3)
```

fricas [C] time = 0.70, size = 1660, normalized size = 4.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/6*(2*(a^2 - b^2)*d^3*f^2*x^3 + 6*(a^2 - b^2)*d^3*e*f*x^2 + 6*(a^2 - b^2)*
d^3*e^2*x + 6*a*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x
+ c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2
- b^2)/b^2))/b) - 6*a*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*co
s(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2))/b) + 6*a*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2
*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2))/b) - 6*a*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3,
1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - (6*I*a*b*d*f^2*x + 6*I*a*b*d*e*f)*sqr
t(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(
b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (
-6*I*a*b*d*f^2*x - 6*I*a*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*
cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (-6*I*a*b*d*f^2*x - 6*I*a*b*d*e*f)*sqrt
(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(
b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (
6*I*a*b*d*f^2*x + 6*I*a*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*
cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 3*(a*b*d^2*e^2 - 2*a*b*c*d*e*f + a*b*c^
2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2
*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 3*(a*b*d^2*e^2 - 2*a*b*c*d*e*f + a*b*c
^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) +
2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 3*(a*b*d^2*e^2 - 2*a*b*c*d*e*f + a*b*
c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c)
+ 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 3*(a*b*d^2*e^2 - 2*a*b*c*d*e*f + a*
b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c
) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 3*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*
```

```
f*x + 2*a*b*c*d*e*f - a*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*co
s(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2) + 2*b)/b) + 3*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*
c*d*e*f - a*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) +
 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2) + 2*b)/b) - 3*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f - a*
b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*
x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b
)/b) + 3*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + 2*a*b*c*d*e*f - a*b*c^2*f^2)*
sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*
(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b))/((a^2
*b - b^3)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \sin\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sin(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [F] time = 1.10, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \sin\left(dx+c\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sin\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{a+b\,\sin\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
[Out] int((sin(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + f x\right)^{2} \sin{\left(c + d x \right)}}{a + b \sin{\left(c + d x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sin(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)**2*sin(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.222 $\int \frac{(e+fx)\sin(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=267

$$\frac{af\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}-\frac{af\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}+\frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd\sqrt{a^2-b^2}}-\frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd\sqrt{a^2-b^2}}+\frac{ex}{b}+\frac{fx^2}{2b}$$

```
[Out] e*x/b+1/2*f*x^2/b+I*a*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/
b/d/(a^2-b^2)^(1/2)-I*a*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2))
)/b/d/(a^2-b^2)^(1/2)+a*f*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))
/b/d^2/(a^2-b^2)^(1/2)-a*f*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2))
)/b/d^2/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4515, 3323, 2264, 2190, 2279, 2391}

$$\frac{af\,\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}-\frac{af\,\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^2\sqrt{a^2-b^2}}+\frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd\sqrt{a^2-b^2}}-\frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sin[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (e*x)/b + (f*x^2)/(2*b) + (I*a*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a -
 Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d) - (I*a*(e + f*x)*Log[1 - (I*b*E^(
I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d) + (a*f*PolyLog[
2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^2) -
(a*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 -
 b^2]*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
```

```
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\sin(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\,dx}{b} - \frac{a\int \frac{e+fx}{a+b\sin(c+dx)}\,dx}{b}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} - \frac{(2a)\int \frac{e^{i(c+dx)}(e+fx)}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} + \frac{(2ia)\int \frac{e^{i(c+dx)}(e+fx)}{2a-2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\sqrt{a^2-b^2}} - \frac{(2ia)\int \frac{e^{i(c+dx)}(e+fx)}{2a+2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\sqrt{a^2-b^2}}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} + \frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{(iaf)\int}{}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} + \frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{(af)\,\mathrm{Su}}{}$$

$$= \frac{ex}{b} + \frac{fx^2}{2b} + \frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} + \frac{af\,\mathrm{Li}_2\left(\right.}{b\sqrt{a^2}}$$

Mathematica [A] time = 1.72, size = 299, normalized size = 1.12

$$\frac{x(2e+fx)}{2b} - \frac{ia\left(-id\left(2e\sqrt{b^2-a^2}\,\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right)+fx\sqrt{a^2-b^2}\left(\log\left(1-\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)-\log\left(1+\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}+ia}\right)\right)\right)-\right.}{bd^2\sqrt{-\left(a^2-b^2\right)^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Sin[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (x*(2*e + f*x))/(2*b) - (I*a*((-I)*d*(2*Sqrt[-a^2 + b^2]*e*ArcTan[(I*a + b*
E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + Sqrt[a^2 - b^2]*f*x*(Log[1 - (b*E^(I*(c
 + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - Log[1 + (b*E^(I*(c + d*x)))/(I*a +
 Sqrt[-a^2 + b^2])])) - Sqrt[a^2 - b^2]*f*PolyLog[2, (b*E^(I*(c + d*x)))/((
-I)*a + Sqrt[-a^2 + b^2])] + Sqrt[a^2 - b^2]*f*PolyLog[2, -((b*E^(I*(c + d*
x)))/(I*a + Sqrt[-a^2 + b^2]))]))/(b*Sqrt[-(a^2 - b^2)^2]*d^2)
```

fricas [B] time = 0.72, size = 1065, normalized size = 3.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*(a^2 - b^2)*d^2*f*x^2 + 4*(a^2 - b^2)*d^2*e*x - 2*I*a*b*f*sqrt(-(a^2
 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d
*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*a*b*
f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c)
- 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1
) + 2*I*a*b*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*
sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
 + 2*b)/b + 1) - 2*I*a*b*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*
x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^
2 - b^2)/b^2) + 2*b)/b + 1) - 2*(a*b*d*e - a*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*
log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*
I*a) - 2*(a*b*d*e - a*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) -
2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(a*b*d*e - a*b
*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2
*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*(a*b*d*e - a*b*c*f)*sqrt(-(a^2 - b^2
)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b
^2) - 2*I*a) - 2*(a*b*d*f*x + a*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*
a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(a*b*d*f*x + a*b*c*f)*sqrt(-(a^2 - b^2)
/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) -
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(a*b*d*f*x + a*b*c*f
)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) +
2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*
(a*b*d*f*x + a*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) +
 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2) + 2*b)/b))/((a^2*b - b^3)*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\sin\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sin(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [B] time = 0.20, size = 548, normalized size = 2.05

$$\frac{f x^2}{2b}+\frac{ex}{b}-\frac{2iae\arctan\left(\frac{2ib\,e^{i(dx+c)}-2a}{2\sqrt{-a^2+b^2}}\right)}{db\sqrt{-a^2+b^2}}-\frac{af\ln\left(\frac{ia+b\,e^{i(dx+c)}-\sqrt{-a^2+b^2}}{ia-\sqrt{-a^2+b^2}}\right)x}{db\sqrt{-a^2+b^2}}-\frac{af\ln\left(\frac{ia+b\,e^{i(dx+c)}-\sqrt{-a^2+b^2}}{ia-\sqrt{-a^2+b^2}}\right)c}{d^2b\sqrt{-a^2+b^2}}+\frac{af\ln\left(\frac{ia+b\,e^{i(dx}\cdots}{ia+\cdots}\right.}{db\sqrt{-a\cdots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] 1/2*f*x^2/b+e*x/b-2*I/d/b*a*e/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x
+c))-2*a)/(-a^2+b^2)^(1/2))-1/d/b*a*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x
+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x-1/d^2/b*a*f/(-a^2+b^2)^(1/
2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c+1/d
/b*a*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a
^2+b^2)^(1/2)))*x+1/d^2/b*a*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a
^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c+I/d^2/b*a*f/(-a^2+b^2)^(1/2)*dilog
((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))-I/d^2/b*a*
f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2
+b^2)^(1/2)))+2*I/d^2/b*a*f*c/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x
+c))-2*a)/(-a^2+b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sin\left(c+d\,x\right)\,\left(e+f\,x\right)}{a+b\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] int((sin(c + d*x)*(e + f*x))/(a + b*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)\sin\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)*sin(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.223 $\int \frac{\sin(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=57

$$\frac{x}{b}-\frac{2a\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{bd\sqrt{a^2-b^2}}$$

```
[Out] x/b-2*a*arctan((b+a*tan(1/2*d*x+1/2*c))/(a^2-b^2)^(1/2))/b/d/(a^2-b^2)^(1/2
)
```

Rubi [A] time = 0.07, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2735, 2660, 618, 204}

$$\frac{x}{b}-\frac{2a\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{bd\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[c + d*x]/(a + b*Sin[c + d*x]),x]
```

```
[Out] x/b - (2*a*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/(b*Sqrt[a^2 -
b^2]*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin(c+dx)}{a+b\sin(c+dx)}\,dx &= \frac{x}{b} - \frac{a\int \frac{1}{a+b\sin(c+dx)}\,dx}{b} \\
&= \frac{x}{b} - \frac{(2a)\,\mathrm{Subst}\left(\int \frac{1}{a+2bx+ax^2}\,dx, x, \tan\left(\frac{1}{2}(c+dx)\right)\right)}{bd} \\
&= \frac{x}{b} + \frac{(4a)\,\mathrm{Subst}\left(\int \frac{1}{-4\left(a^2-b^2\right)-x^2}\,dx, x, 2b+2a\tan\left(\frac{1}{2}(c+dx)\right)\right)}{bd} \\
&= \frac{x}{b} - \frac{2a\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 59, normalized size = 1.04

$$\frac{-\frac{2a\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{d\sqrt{a^2-b^2}}+\frac{c}{d}+x}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[c + d*x]/(a + b*Sin[c + d*x]),x]
```

```
[Out] (c/d + x - (2*a*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/(Sqrt[a^2
 - b^2]*d))/b
```

fricas [A] time = 0.53, size = 237, normalized size = 4.16

$$\left[\frac{2\left(a^2-b^2\right)dx-\sqrt{-a^2+b^2}\,a\log\left(-\frac{\left(2a^2-b^2\right)\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2-2\left(a\cos(dx+c)\sin(dx+c)+b\cos(dx+c)\right)\sqrt{-a^2+b^2}}{b^2\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2}\right)}{2\left(a^2b-b^3\right)d}, \frac{(a\ldots}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(a^2 - b^2)*d*x - sqrt(-a^2 + b^2)*a*log(-((2*a^2 - b^2)*cos(d*x +
c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2 - 2*(a*cos(d*x + c)*sin(d*x + c) + b*
cos(d*x + c))*sqrt(-a^2 + b^2))/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) -
a^2 - b^2)))/((a^2*b - b^3)*d), ((a^2 - b^2)*d*x + sqrt(a^2 - b^2)*a*arctan
(-(a*sin(d*x + c) + b)/(sqrt(a^2 - b^2)*cos(d*x + c))))/((a^2*b - b^3)*d)]
```

giac [A] time = 0.32, size = 77, normalized size = 1.35

$$-\frac{\frac{2\left(\pi\left\lfloor\frac{dx+c}{2\pi}+\frac{1}{2}\right\rfloor\operatorname{sgn}(a)+\arctan\left(\frac{a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+b}{\sqrt{a^2-b^2}}\right)\right)a}{\sqrt{a^2-b^2}\,b}-\frac{dx+c}{b}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -(2*(pi*floor(1/2*(d*x + c)/pi + 1/2)*sgn(a) + arctan((a*tan(1/2*d*x + 1/2*
c) + b)/sqrt(a^2 - b^2)))*a/(sqrt(a^2 - b^2)*b) - (d*x + c)/b)/d
```

maple [A] time = 0.01, size = 70, normalized size = 1.23

$$\frac{2\arctan\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{db}-\frac{2a\arctan\left(\frac{2a\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+2b}{2\sqrt{a^2-b^2}}\right)}{db\sqrt{a^2-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] 2/d/b*arctan(tan(1/2*d*x+1/2*c))-2/d/b*a/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*ta
n(1/2*d*x+1/2*c)+2*b)/(a^2-b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [B] time = 2.00, size = 139, normalized size = 2.44

$$\frac{x}{b}-\frac{2\,a\,\mathrm{atanh}\left(\frac{\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a^4-\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a^3\,b-3\,\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a^2\,b^2+\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a\,b^3+2\,\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,b^4}{{\left(b^2-a^2\right)}^{3/2}\,\left(a\,\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)+2\,b\,\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right)}\right)}{b\,d\,\sqrt{b^2-a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)/(a + b*sin(c + d*x)),x)
```

```
[Out] x/b - (2*a*atanh((a^4*sin(c/2 + (d*x)/2) + 2*b^4*sin(c/2 + (d*x)/2) + a*b^3
*cos(c/2 + (d*x)/2) - a^3*b*cos(c/2 + (d*x)/2) - 3*a^2*b^2*sin(c/2 + (d*x)/
2))/((b^2 - a^2)^(3/2)*(a*cos(c/2 + (d*x)/2) + 2*b*sin(c/2 + (d*x)/2)))))/(
b*d*(b^2 - a^2)^(1/2))
```

sympy [A] time = 61.34, size = 335, normalized size = 5.88

$$\begin{cases} \tilde{\infty} x & \text{for}\: a = 0 \wedge b = 0 \wedge d = 0 \\ \frac{b d x \tan{\left(\frac{c}{2} + \frac{d x}{2} \right)}}{b^{2} d \tan{\left(\frac{c}{2} + \frac{d x}{2} \right)} - b d \sqrt{b^{2}}} + \frac{2 b}{b^{2} d \tan{\left(\frac{c}{2} + \frac{d x}{2} \right)} - b d \sqrt{b^{2}}} - \frac{d x \sqrt{b^{2}}}{b^{2} d \tan{\left(\frac{c}{2} + \frac{d x}{2} \right)} - b d \sqrt{b^{2}}} & \text{for}\: a = - \sqrt{b^{2}} \\ \frac{b d x \tan{\left(\frac{c}{2} + \frac{d x}{2} \right)}}{b^{2} d \tan{\left(\frac{c}{2} + \frac{d x}{2} \right)} + b d \sqrt{b^{2}}} + \frac{2 b}{b^{2} d \tan{\left(\frac{c}{2} + \frac{d x}{2} \right)} + b d \sqrt{b^{2}}} + \frac{d x \sqrt{b^{2}}}{b^{2} d \tan{\left(\frac{c}{2} + \frac{d x}{2} \right)} + b d \sqrt{b^{2}}} & \text{for}\: a = \sqrt{b^{2}} \\ \frac{x}{b} & \text{for}\: a = 0 \\ \frac{x \sin{\left(c \right)}}{a + b \sin{\left(c \right)}} & \text{for}\: d = 0 \\ - \frac{\cos{\left(c + d x \right)}}{a d} & \text{for}\: b = 0 \\ - \frac{a \log{\left(\tan{\left(\frac{c}{2} + \frac{d x}{2} \right)} + \frac{b}{a} - \frac{\sqrt{- a^{2} + b^{2}}}{a} \right)}}{b d \sqrt{- a^{2} + b^{2}}} + \frac{a \log{\left(\tan{\left(\frac{c}{2} + \frac{d x}{2} \right)} + \frac{b}{a} + \frac{\sqrt{- a^{2} + b^{2}}}{a} \right)}}{b d \sqrt{- a^{2} + b^{2}}} + \frac{x}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Piecewise((zoo*x, Eq(a, 0) & Eq(b, 0) & Eq(d, 0)), (b*d*x*tan(c/2 + d*x/2)/
(b**2*d*tan(c/2 + d*x/2) - b*d*sqrt(b**2)) + 2*b/(b**2*d*tan(c/2 + d*x/2) -
 b*d*sqrt(b**2)) - d*x*sqrt(b**2)/(b**2*d*tan(c/2 + d*x/2) - b*d*sqrt(b**2)
), Eq(a, -sqrt(b**2))), (b*d*x*tan(c/2 + d*x/2)/(b**2*d*tan(c/2 + d*x/2) +
b*d*sqrt(b**2)) + 2*b/(b**2*d*tan(c/2 + d*x/2) + b*d*sqrt(b**2)) + d*x*sqrt
```

```
(b**2)/(b**2*d*tan(c/2 + d*x/2) + b*d*sqrt(b**2)), Eq(a, sqrt(b**2))), (x/b
, Eq(a, 0)), (x*sin(c)/(a + b*sin(c)), Eq(d, 0)), (-cos(c + d*x)/(a*d), Eq(
b, 0)), (-a*log(tan(c/2 + d*x/2) + b/a - sqrt(-a**2 + b**2)/a)/(b*d*sqrt(-a
**2 + b**2)) + a*log(tan(c/2 + d*x/2) + b/a + sqrt(-a**2 + b**2)/a)/(b*d*sq
rt(-a**2 + b**2)) + x/b, True))
```

3.224 $\int \frac{(e+fx)^3\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=643

$$\frac{6a^2f^3\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^4\sqrt{a^2-b^2}}-\frac{6a^2f^3\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^2d^4\sqrt{a^2-b^2}}-\frac{6ia^2f^2(e+fx)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^3\sqrt{a^2-b^2}}+\frac{6ia^2f^2(e+fx)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^2d^3\sqrt{a^2-b^2}}-\frac{3a^2}{}$$

```
[Out] -1/4*a*(f*x+e)^4/b^2/f+6*f^2*(f*x+e)*cos(d*x+c)/b/d^3-(f*x+e)^3*cos(d*x+c)/
b/d-6*f^3*sin(d*x+c)/b/d^4+3*f*(f*x+e)^2*sin(d*x+c)/b/d^2-I*a^2*(f*x+e)^3*l
n(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^2/d/(a^2-b^2)^(1/2)+I*a^2*(f*
x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^2/d/(a^2-b^2)^(1/2)-3
*a^2*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^2/d^2/
(a^2-b^2)^(1/2)+3*a^2*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)
^(1/2)))/b^2/d^2/(a^2-b^2)^(1/2)-6*I*a^2*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d
*x+c))/(a-(a^2-b^2)^(1/2)))/b^2/d^3/(a^2-b^2)^(1/2)+6*I*a^2*f^2*(f*x+e)*pol
ylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^2/d^3/(a^2-b^2)^(1/2)+6*a^
2*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^2/d^4/(a^2-b^2)^(
1/2)-6*a^2*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^2/d^4/(a
^2-b^2)^(1/2)
```

Rubi [A] time = 1.18, antiderivative size = 643, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 11, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.393, Rules used = {4515, 3296, 2637, 32, 3323, 2264, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6ia^2f^2(e+fx)\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^3\sqrt{a^2-b^2}}+\frac{6ia^2f^2(e+fx)\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^2d^3\sqrt{a^2-b^2}}-\frac{3a^2f(e+fx)^2\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{}}\right)}{b^2d^2\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sin[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(a*(e + f*x)^4)/(4*b^2*f) + (6*f^2*(e + f*x)*Cos[c + d*x])/(b*d^3) - ((e +
 f*x)^3*Cos[c + d*x])/(b*d) - (I*a^2*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x
)))/(a - Sqrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d) + (I*a^2*(e + f*x)^3*Lo
g[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d)
 - (3*a^2*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^
2])])/(b^2*Sqrt[a^2 - b^2]*d^2) + (3*a^2*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I
*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d^2) - ((6*I)*a^2
*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^
2*Sqrt[a^2 - b^2]*d^3) + ((6*I)*a^2*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c +
 d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d^3) + (6*a^2*f^3*Poly
```

```
Log[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d
^4) - (6*a^2*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(
b^2*Sqrt[a^2 - b^2]*d^4) - (6*f^3*Sin[c + d*x])/(b*d^4) + (3*f*(e + f*x)^2*
Sin[c + d*x])/(b*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\sin(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\sin(c+dx)}{a+b\sin(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^3\cos(c+dx)}{bd} - \frac{a\int (e+fx)^3\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^3}{a+b\sin(c+dx)}\,dx}{b^2} + \frac{(3f)\int (e+fx)^2}{b}$$

$$= -\frac{a(e+fx)^4}{4b^2f} - \frac{(e+fx)^3\cos(c+dx)}{bd} + \frac{3f(e+fx)^2\sin(c+dx)}{bd^2} + \frac{\left(2a^2\right)\int \frac{e^{i(c+d}}{ib+2ae^{i(c+}}}{b^2}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} - \frac{(e+fx)^3\cos(c+dx)}{bd} + \frac{3f(e+fx)^2\sin}{bd^2}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} - \frac{(e+fx)^3\cos(c+dx)}{bd} - \frac{ia^2(e+fx)^3\log}{b^2\sqrt{a^2}}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} - \frac{(e+fx)^3\cos(c+dx)}{bd} - \frac{ia^2(e+fx)^3\log}{b^2\sqrt{a^2}}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} - \frac{(e+fx)^3\cos(c+dx)}{bd} - \frac{ia^2(e+fx)^3\log}{b^2\sqrt{a^2}}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} - \frac{(e+fx)^3\cos(c+dx)}{bd} - \frac{ia^2(e+fx)^3\log}{b^2\sqrt{a^2}}$$

$$= -\frac{a(e+fx)^4}{4b^2f} + \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} - \frac{(e+fx)^3\cos(c+dx)}{bd} - \frac{ia^2(e+fx)^3\log}{b^2\sqrt{a^2}}$$

Mathematica [A] time = 7.62, size = 1020, normalized size = 1.59

$$-ax\left(4e^3+6fxe^2+4f^2x^2e+f^3x^3\right)d^4-4b(e+fx)\left(d^2(e+fx)^2-6f^2\right)\cos(c+dx)d+\frac{4a^2\left(2\sqrt{b^2-a^2}\,e^3\tan^{-1}\left(\frac{ia+be^{i(c+dx}}{\sqrt{a^2-b^2}}\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sin[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-(a*d^4*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3)) - 4*b*d*(e + f*x)*(
-6*f^2 + d^2*(e + f*x)^2)*Cos[c + d*x] + (4*a^2*(2*Sqrt[-a^2 + b^2]*d^3*e^3
```

```
*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + 3*Sqrt[a^2 - b^2]*d^3*
e^2*f*x*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 3*Sqrt[a
^2 - b^2]*d^3*e*f^2*x^2*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b
^2])] + Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + S
qrt[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d^3*e^2*f*x*Log[1 + (b*E^(I*(c + d*x)
))/(I*a + Sqrt[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*Log[1 + (b*E
^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log
[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - (3*I)*Sqrt[a^2 - b^2]*
d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2]
)] + (3*I)*Sqrt[a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(I*(c + d*x)
))/(I*a + Sqrt[-a^2 + b^2]))] + 6*Sqrt[a^2 - b^2]*d*e*f^2*PolyLog[3, (b*E^(
I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 6*Sqrt[a^2 - b^2]*d*f^3*x*Poly
Log[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 6*Sqrt[a^2 - b^2]
*d*e*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] - 6*Sq
rt[a^2 - b^2]*d*f^3*x*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b
^2]))] + (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, (b*E^(I*(c + d*x)))/((-I)*a +
 Sqrt[-a^2 + b^2])] - (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, -((b*E^(I*(c + d
*x)))/(I*a + Sqrt[-a^2 + b^2]))]))/Sqrt[-(a^2 - b^2)^2] + 12*b*f*(-2*f^2 +
d^2*(e + f*x)^2)*Sin[c + d*x])/(4*b^2*d^4)
```

fricas [C] time = 0.79, size = 2691, normalized size = 4.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*((a^3 - a*b^2)*d^4*f^3*x^4 + 4*(a^3 - a*b^2)*d^4*e*f^2*x^3 + 6*(a^3 -
a*b^2)*d^4*e^2*f*x^2 + 4*(a^3 - a*b^2)*d^4*e^3*x + 12*I*a^2*b*f^3*sqrt(-(a^
2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*
cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*I*a^2*b*f^
3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x +
 c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12
*I*a^2*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2
*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2))/b) + 12*I*a^2*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(
d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(
a^2 - b^2)/b^2))/b) + 2*(-3*I*a^2*b*d^2*f^3*x^2 - 6*I*a^2*b*d^2*e*f^2*x - 3
*I*a^2*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) +
 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2) + 2*b)/b + 1) + 2*(3*I*a^2*b*d^2*f^3*x^2 + 6*I*a^2*b*d^2*e*f^2*x + 3*
I*a^2*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) +
2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/
b^2) + 2*b)/b + 1) + 2*(3*I*a^2*b*d^2*f^3*x^2 + 6*I*a^2*b*d^2*e*f^2*x + 3*I
*a^2*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) +
```

```
2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/
b^2) + 2*b)/b + 1) + 2*(-3*I*a^2*b*d^2*f^3*x^2 - 6*I*a^2*b*d^2*e*f^2*x - 3*
I*a^2*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) +
 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2) + 2*b)/b + 1) - 2*(a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*
d*e*f^2 - a^2*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*
b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(a^2*b*d^3*e^3 - 3
*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*sqrt(-(a^2 - b^2)
/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2
) - 2*I*a) + 2*(a^2*b*d^3*e^3 - 3*a^2*b*c*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 -
 a^2*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*
x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*(a^2*b*d^3*e^3 - 3*a^2*b*c
*d^2*e^2*f + 3*a^2*b*c^2*d*e*f^2 - a^2*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*lo
g(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I
*a) - 2*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x +
3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*sqrt(-(a^2 - b^2
)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) -
 I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(a^2*b*d^3*f^3*x^3
+ 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2
*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d
*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2) + 2*b)/b) - 2*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3
*a^2*b*d^3*e^2*f*x + 3*a^2*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*
f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c)
 + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) +
 2*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + 3*a^2*b*d^3*e^2*f*x + 3*a^2
*b*c*d^2*e^2*f - 3*a^2*b*c^2*d*e*f^2 + a^2*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2
)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b
*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 12*(a^2*b*d*f^3*x + a^2*b
*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*s
in(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))
/b) - 12*(a^2*b*d*f^3*x + a^2*b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3,
1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*
x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(a^2*b*d*f^3*x + a^2*b*d*e*f^2)*sqr
t(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c)
+ 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*(a^
2*b*d*f^3*x + a^2*b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*
cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2))/b) + 4*((a^2*b - b^3)*d^3*f^3*x^3 + 3*(a^2*b - b^3)*d^
3*e*f^2*x^2 + (a^2*b - b^3)*d^3*e^3 - 6*(a^2*b - b^3)*d*e*f^2 + 3*((a^2*b -
 b^3)*d^3*e^2*f - 2*(a^2*b - b^3)*d*f^3)*x)*cos(d*x + c) - 12*((a^2*b - b^3
)*d^2*f^3*x^2 + 2*(a^2*b - b^3)*d^2*e*f^2*x + (a^2*b - b^3)*d^2*e^2*f - 2*(
a^2*b - b^3)*f^3)*sin(d*x + c))/((a^2*b^2 - b^4)*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sin\left(dx+c\right)^{2}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sin(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [F] time = 1.53, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\left(\sin^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sin(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*sin(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^2*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sin(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.225 $\int \frac{(e+fx)^2\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=479

$$-\frac{2ia^2f^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^3\sqrt{a^2-b^2}}+\frac{2ia^2f^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^2d^3\sqrt{a^2-b^2}}-\frac{2a^2f(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^2\sqrt{a^2-b^2}}+\frac{2a^2f(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^2d^2\sqrt{a^2-b^2}}-\frac{ia^2(\cdots}{\cdots}$$

```
[Out] -1/3*a*(f*x+e)^3/b^2/f+2*f^2*cos(d*x+c)/b/d^3-(f*x+e)^2*cos(d*x+c)/b/d+2*f*
(f*x+e)*sin(d*x+c)/b/d^2-I*a^2*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^
2)^(1/2)))/b^2/d/(a^2-b^2)^(1/2)+I*a^2*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a
+(a^2-b^2)^(1/2)))/b^2/d/(a^2-b^2)^(1/2)-2*a^2*f*(f*x+e)*polylog(2,I*b*exp(
I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^2/d^2/(a^2-b^2)^(1/2)+2*a^2*f*(f*x+e)*pol
ylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^2/d^2/(a^2-b^2)^(1/2)-2*I*
a^2*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^2/d^3/(a^2-b^2)
^(1/2)+2*I*a^2*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^2/d^
3/(a^2-b^2)^(1/2)
```

Rubi [A] time = 1.04, antiderivative size = 479, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4515, 3296, 2638, 32, 3323, 2264, 2190, 2531, 2282, 6589}

$$-\frac{2a^2f(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^2\sqrt{a^2-b^2}}+\frac{2a^2f(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^2d^2\sqrt{a^2-b^2}}-\frac{2ia^2f^2\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^3\sqrt{a^2-b^2}}+\frac{2ia\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sin[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(a*(e + f*x)^3)/(3*b^2*f) + (2*f^2*Cos[c + d*x])/(b*d^3) - ((e + f*x)^2*Co
s[c + d*x])/(b*d) - (I*a^2*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - S
qrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d) + (I*a^2*(e + f*x)^2*Log[1 - (I*b
*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d) - (2*a^2*
f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^2*S
qrt[a^2 - b^2]*d^2) + (2*a^2*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(
a + Sqrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d^2) - ((2*I)*a^2*f^2*PolyLog[3
, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d^3) +
 ((2*I)*a^2*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b
^2*Sqrt[a^2 - b^2]*d^3) + (2*f*(e + f*x)*Sin[c + d*x])/(b*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2 \sin^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2 \sin(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2 \sin(c+dx)}{a+b\sin(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^2\cos(c+dx)}{bd} - \frac{a\int (e+fx)^2\,dx}{b^2} + \frac{a^2\int \frac{(e+fx)^2}{a+b\sin(c+dx)}\,dx}{b^2} + \frac{(2f)\int (e+fx)}{bd}$$

$$= -\frac{a(e+fx)^3}{3b^2f} - \frac{(e+fx)^2\cos(c+dx)}{bd} + \frac{2f(e+fx)\sin(c+dx)}{bd^2} + \frac{\left(2a^2\right)\int \frac{e^{i(c+dx)}}{ib+2ae^{i(c+dx)}}}{b^2}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cos(c+dx)}{bd^3} - \frac{(e+fx)^2\cos(c+dx)}{bd} + \frac{2f(e+fx)\sin(c+dx)}{bd^2}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cos(c+dx)}{bd^3} - \frac{(e+fx)^2\cos(c+dx)}{bd} - \frac{ia^2(e+fx)^2\log\left(1-\frac{ib}{a-}\right.}{b^2\sqrt{a^2-b^2}\,d}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cos(c+dx)}{bd^3} - \frac{(e+fx)^2\cos(c+dx)}{bd} - \frac{ia^2(e+fx)^2\log\left(1-\frac{ib}{a-}\right.}{b^2\sqrt{a^2-b^2}\,d}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cos(c+dx)}{bd^3} - \frac{(e+fx)^2\cos(c+dx)}{bd} - \frac{ia^2(e+fx)^2\log\left(1-\frac{ib}{a-}\right.}{b^2\sqrt{a^2-b^2}\,d}$$

$$= -\frac{a(e+fx)^3}{3b^2f} + \frac{2f^2\cos(c+dx)}{bd^3} - \frac{(e+fx)^2\cos(c+dx)}{bd} - \frac{ia^2(e+fx)^2\log\left(1-\frac{ib}{a-}\right.}{b^2\sqrt{a^2-b^2}\,d}$$

Mathematica [A] time = 3.35, size = 531, normalized size = 1.11

$$\frac{3ia^2\left(-i\left(d^2\left(2e^2\sqrt{b^2-a^2}\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right)+fx\sqrt{a^2-b^2}(2e+fx)\left(\log\left(1-\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)-\log\left(1+\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}+ia}\right)\right)\right)+2f^2\sqrt{a^2-b^2}\,\mathrm{Li}_3\left(\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)-2f^2\sqrt{a^2-b^2}}{d^3\sqrt{-\left(a^2-b^2\right)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sin[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-(a*x*(3*e^2 + 3*e*f*x + f^2*x^2)) + ((3*I)*a^2*(-2*Sqrt[a^2 - b^2]*d*f*(e
 + f*x)*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 2*Sqr
t[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^
2 + b^2]))] - I*(d^2*(2*Sqrt[-a^2 + b^2]*e^2*ArcTan[(I*a + b*E^(I*(c + d*x)
```

```
))/Sqrt[a^2 - b^2]] + Sqrt[a^2 - b^2]*f*x*(2*e + f*x)*(Log[1 - (b*E^(I*(c +
 d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - Log[1 + (b*E^(I*(c + d*x)))/(I*a + S
qrt[-a^2 + b^2])])) + 2*Sqrt[a^2 - b^2]*f^2*PolyLog[3, (b*E^(I*(c + d*x)))/
((-I)*a + Sqrt[-a^2 + b^2])] - 2*Sqrt[a^2 - b^2]*f^2*PolyLog[3, -((b*E^(I*(
c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))])))/(Sqrt[-(a^2 - b^2)^2]*d^3) - (3*b*
Cos[d*x]*((-2*f^2 + d^2*(e + f*x)^2)*Cos[c] - 2*d*f*(e + f*x)*Sin[c]))/d^3
+ (3*b*(2*d*f*(e + f*x)*Cos[c] + (-2*f^2 + d^2*(e + f*x)^2)*Sin[c])*Sin[d*x
])/d^3)/(3*b^2)
```

fricas [C] time = 0.67, size = 1865, normalized size = 3.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/6*(2*(a^3 - a*b^2)*d^3*f^2*x^3 + 6*(a^3 - a*b^2)*d^3*e*f*x^2 + 6*(a^3 -
a*b^2)*d^3*e^2*x + 6*a^2*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a
*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sq
rt(-(a^2 - b^2)/b^2))/b) - 6*a^2*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/
2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6*a^2*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polyl
og(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b
*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*a^2*b*f^2*sqrt(-(a^2 - b^2)/b
^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x +
 c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + (-6*I*a^2*b*d*f^2*x -
6*I*a^2*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*
a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2) + 2*b)/b + 1) + (6*I*a^2*b*d*f^2*x + 6*I*a^2*b*d*e*f)*sqrt(-(a^2 - b^2)/
b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c)
- I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (6*I*a^2*b*d*f^2
*x + 6*I*a^2*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c
) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b
^2)/b^2) + 2*b)/b + 1) + (-6*I*a^2*b*d*f^2*x - 6*I*a^2*b*d*e*f)*sqrt(-(a^2
- b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d
*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 3*(a^2*b
*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*
cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 3
*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*l
og(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I
*a) + 3*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sqrt(-(a^2 - b^2)
/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^
2) + 2*I*a) + 3*(a^2*b*d^2*e^2 - 2*a^2*b*c*d*e*f + a^2*b*c^2*f^2)*sqrt(-(a^
2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 -
 b^2)/b^2) - 2*I*a) - 3*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*
```

```
d*e*f - a^2*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) +
 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2) + 2*b)/b) + 3*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*
f - a^2*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a
*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
) + 2*b)/b) - 3*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f -
a^2*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*si
n(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) +
 2*b)/b) + 3*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^2*e*f*x + 2*a^2*b*c*d*e*f - a^2
*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d
*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*
b)/b) + 6*((a^2*b - b^3)*d^2*f^2*x^2 + 2*(a^2*b - b^3)*d^2*e*f*x + (a^2*b -
 b^3)*d^2*e^2 - 2*(a^2*b - b^3)*f^2)*cos(d*x + c) - 12*((a^2*b - b^3)*d*f^2
*x + (a^2*b - b^3)*d*e*f)*sin(d*x + c))/((a^2*b^2 - b^4)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\sin\left(dx+c\right)^2}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sin(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [F] time = 1.56, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\left(\sin^2\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sin(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sin(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^2*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
[Out] \text{Hanged}
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sin(d*x+c)**2/(a+b*sin(d*x+c)),x)
[Out] Timed out
```

3.226 $\int \frac{(e+fx)\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=311

$$-\frac{a^2 f \text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^2\sqrt{a^2-b^2}}+\frac{a^2 f \text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^2d^2\sqrt{a^2-b^2}}-\frac{ia^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d\sqrt{a^2-b^2}}+\frac{ia^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^2d\sqrt{a^2-b^2}}-\frac{aex}{b^2}-\frac{a}{2}$$

```
[Out] -a*e*x/b^2-1/2*a*f*x^2/b^2-(f*x+e)*cos(d*x+c)/b/d+f*sin(d*x+c)/b/d^2-I*a^2*
(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^2/d/(a^2-b^2)^(1/2)+
I*a^2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^2/d/(a^2-b^2)^
(1/2)-a^2*f*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^2/d^2/(a^2-
b^2)^(1/2)+a^2*f*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^2/d^2/
(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.55, antiderivative size = 311, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4515, 3296, 2637, 3323, 2264, 2190, 2279, 2391}

$$-\frac{a^2 f \text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^2\sqrt{a^2-b^2}}+\frac{a^2 f \text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^2d^2\sqrt{a^2-b^2}}-\frac{ia^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d\sqrt{a^2-b^2}}+\frac{ia^2(e+fx)\log\left(1-\frac{ib}{\sqrt{a}}\right)}{b^2d\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sin[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -((a*e*x)/b^2) - (a*f*x^2)/(2*b^2) - ((e + f*x)*Cos[c + d*x])/(b*d) - (I*a^
2*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^2*Sqrt
[a^2 - b^2]*d) + (I*a^2*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a
^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d) - (a^2*f*PolyLog[2, (I*b*E^(I*(c + d*x
)))/(a - Sqrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d^2) + (a^2*f*PolyLog[2, (
I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*Sqrt[a^2 - b^2]*d^2) + (f
*Sin[c + d*x])/(b*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\sin(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\sin(c+dx)}{a+b\sin(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)\cos(c+dx)}{bd} - \frac{a\int (e+fx)\,dx}{b^2} + \frac{a^2\int \frac{e+fx}{a+b\sin(c+dx)}\,dx}{b^2} + \frac{f\int \cos(c+dx)\,dx}{bd}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} - \frac{(e+fx)\cos(c+dx)}{bd} + \frac{f\sin(c+dx)}{bd^2} + \frac{(2a^2)\int \frac{e^{i(c+dx)}(e+fx)}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}}{b^2}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} - \frac{(e+fx)\cos(c+dx)}{bd} + \frac{f\sin(c+dx)}{bd^2} - \frac{(2ia^2)\int \frac{e^{i(c+dx)}(e+fx)}{2a-2\sqrt{a^2-b^2}-2ibe^{i(c+dx}}}{b\sqrt{a^2-b^2}}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} - \frac{(e+fx)\cos(c+dx)}{bd} - \frac{ia^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2\sqrt{a^2-b^2}\,d} + \frac{ia^2(e+fx}{b^2}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} - \frac{(e+fx)\cos(c+dx)}{bd} - \frac{ia^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2\sqrt{a^2-b^2}\,d} + \frac{ia^2(e+fx}{b^2}$$

$$= -\frac{aex}{b^2} - \frac{afx^2}{2b^2} - \frac{(e+fx)\cos(c+dx)}{bd} - \frac{ia^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2\sqrt{a^2-b^2}\,d} + \frac{ia^2(e+fx}{b^2}$$

Mathematica [B] time = 7.39, size = 709, normalized size = 2.28

$$\frac{2a^2d(e+fx)\left(\frac{2(de-cf)\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}} - \frac{if\left(\text{Li}_2\left(\frac{a\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)}{a+i\left(b+\sqrt{b^2-a^2}\right)}\right)+\log\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)\log\left(\frac{\sqrt{b^2-a^2}+a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{b^2-a^2}-ia+b}\right)\right)}{\sqrt{b^2-a^2}} + \frac{if\left(\text{Li}_2\left(\frac{a\left(i\tan\left(\frac{1}{2}(c+dx)\right)+1\right)}{a-i\left(b+\sqrt{b^2-a^2}\right)}\right)+\right.}{}\right.}{if}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Sin[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (a*(c + d*x)*(c*f - d*(2*e + f*x)) - 2*b*d*(e + f*x)*Cos[c + d*x] + (2*a^2*
d*(e + f*x)*((2*(d*e - c*f)*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]
])/Sqrt[a^2 - b^2] - (I*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 +
 b^2] + a*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (
a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b
```

```
^2] + (I*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(
c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 + I*Tan[(c +
d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1
- I*Tan[(c + d*x)/2]]*Log[(-b + Sqrt[-a^2 + b^2] - a*Tan[(c + d*x)/2])/(I*a
 - b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(I + Tan[(c + d*x)/2]))/(I*a - b
+ Sqrt[-a^2 + b^2])]))/Sqrt[-a^2 + b^2] - (I*f*(Log[1 + I*Tan[(c + d*x)/2]]
*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2
])] + PolyLog[2, (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))
]))/Sqrt[-a^2 + b^2]))/(d*e - c*f + I*f*Log[1 - I*Tan[(c + d*x)/2]] - I*f*L
og[1 + I*Tan[(c + d*x)/2]]) + 2*b*f*Sin[c + d*x])/(2*b^2*d^2)
```

fricas [B] time = 0.67, size = 1167, normalized size = 3.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(2*(a^3 - a*b^2)*d^2*f*x^2 - 2*I*a^2*b*f*sqrt(-(a^2 - b^2)/b^2)*dilog(
-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*a^2*b*f*sqrt(-(a^2 - b^
2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x +
c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*a^2*b*f*s
qrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) +
2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)
- 2*I*a^2*b*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*
sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
 + 2*b)/b + 1) + 4*(a^3 - a*b^2)*d^2*e*x - 4*(a^2*b - b^3)*f*sin(d*x + c) -
 2*(a^2*b*d*e - a^2*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*
I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(a^2*b*d*e - a^2
*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) +
2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(a^2*b*d*e - a^2*b*c*f)*sqrt(-(a^2
- b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b
^2)/b^2) + 2*I*a) + 2*(a^2*b*d*e - a^2*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2
*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)
- 2*(a^2*b*d*f*x + a^2*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x
 + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2
 - b^2)/b^2) + 2*b)/b) + 2*(a^2*b*d*f*x + a^2*b*c*f)*sqrt(-(a^2 - b^2)/b^2)
*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*s
in(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(a^2*b*d*f*x + a^2*b*c*f)
*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2
*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(
a^2*b*d*f*x + a^2*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c
) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b
```

```
^2)/b^2) + 2*b)/b) + 4*((a^2*b - b^3)*d*f*x + (a^2*b - b^3)*d*e)*cos(d*x +
c))/((a^2*b^2 - b^4)*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\sin\left(dx+c\right)^{2}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sin(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [B] time = 0.52, size = 625, normalized size = 2.01

$$-\frac{af\,x^{2}}{2b^{2}}-\frac{aex}{b^{2}}-\frac{\left(dfx+de+if\right)\mathrm{e}^{i(dx+c)}}{2d^{2}b}-\frac{\left(dfx+de-if\right)\mathrm{e}^{-i(dx+c)}}{2d^{2}b}+\frac{2ia^{2}e\arctan\left(\frac{2ib\,\mathrm{e}^{i(dx+c)}-2a}{2\sqrt{-a^{2}+b^{2}}}\right)}{b^{2}d\sqrt{-a^{2}+b^{2}}}+\frac{a^{2}f\ln\left(\frac{ia+b\,\mathrm{e}^{i(dx+c)}-\cdots}{ia-\sqrt{-a^{2}\cdots}}\right)}{b^{2}d\sqrt{-a^{2}+\cdots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sin(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] -1/2*a*f*x^2/b^2-a*e*x/b^2-1/2*(d*f*x+I*f+d*e)/d^2/b*exp(I*(d*x+c))-1/2*(d*
f*x-I*f+d*e)/d^2/b*exp(-I*(d*x+c))+2*I*a^2/b^2/d*e/(-a^2+b^2)^(1/2)*arctan(
1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))+a^2/b^2/d*f/(-a^2+b^2)^(1/
2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x+a^2
/b^2/d^2*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a
-(-a^2+b^2)^(1/2)))*c-a^2/b^2/d*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))
+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-a^2/b^2/d^2*f/(-a^2+b^2)^(1/2)
*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-I*a^2
/b^2/d^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(
I*a-(-a^2+b^2)^(1/2)))+I*a^2/b^2/d^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*
(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-2*I*a^2/b^2/d^2*f*c/(-a^
2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sin(c+dx)^2 \left(e+fx\right)}{a+b\,\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^2*(e + f*x))/(a + b*sin(c + d*x)),x)
[Out] int((sin(c + d*x)^2*(e + f*x))/(a + b*sin(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)**2/(a+b*sin(d*x+c)),x)
[Out] Timed out
```

3.227 $\int \frac{\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=75

$$\frac{2a^2\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{b^2d\sqrt{a^2-b^2}}-\frac{ax}{b^2}-\frac{\cos(c+dx)}{bd}$$

```
[Out] -a*x/b^2-cos(d*x+c)/b/d+2*a^2*arctan((b+a*tan(1/2*d*x+1/2*c))/(a^2-b^2)^(1/
2))/b^2/d/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2746, 12, 2735, 2660, 618, 204}

$$\frac{2a^2\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{b^2d\sqrt{a^2-b^2}}-\frac{ax}{b^2}-\frac{\cos(c+dx)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[c + d*x]^2/(a + b*Sin[c + d*x]),x]
```

```
[Out] -((a*x)/b^2) + (2*a^2*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/(b^
2*Sqrt[a^2 - b^2]*d) - Cos[c + d*x]/(b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2746

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2/((c_.) + (d_.)*sin[(e_.) + (f
_.)*(x_)]), x_Symbol] :> -Simp[(b^2*Cos[e + f*x])/(d*f), x] + Dist[1/d, Int
[Simp[a^2*d - b*(b*c - 2*a*d)*Sin[e + f*x], x]/(c + d*Sin[e + f*x]), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx &= -\frac{\cos(c+dx)}{bd}-\frac{\int \frac{a\sin(c+dx)}{a+b\sin(c+dx)}\,dx}{b}\\
&= -\frac{\cos(c+dx)}{bd}-\frac{a\int \frac{\sin(c+dx)}{a+b\sin(c+dx)}\,dx}{b}\\
&= -\frac{ax}{b^2}-\frac{\cos(c+dx)}{bd}+\frac{a^2\int \frac{1}{a+b\sin(c+dx)}\,dx}{b^2}\\
&= -\frac{ax}{b^2}-\frac{\cos(c+dx)}{bd}+\frac{\left(2a^2\right)\operatorname{Subst}\left(\int \frac{1}{a+2bx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(c+dx)\right)\right)}{b^2d}\\
&= -\frac{ax}{b^2}-\frac{\cos(c+dx)}{bd}-\frac{\left(4a^2\right)\operatorname{Subst}\left(\int \frac{1}{-4\left(a^2-b^2\right)-x^2}\,dx,x,2b+2a\tan\left(\frac{1}{2}(c+dx)\right)\right)}{b^2d}\\
&= -\frac{ax}{b^2}+\frac{2a^2\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b^2\sqrt{a^2-b^2}\,d}-\frac{\cos(c+dx)}{bd}
\end{aligned}$$

Mathematica [A] time = 0.18, size = 71, normalized size = 0.95

$$-\frac{-\frac{2a^2\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}}+a(c+dx)+b\cos(c+dx)}{b^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[c + d*x]^2/(a + b*Sin[c + d*x]),x]
```

```
[Out] -((a*(c + d*x) - (2*a^2*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/S
qrt[a^2 - b^2] + b*Cos[c + d*x])/(b^2*d))
```

fricas [A] time = 0.47, size = 283, normalized size = 3.77

$$\left[-\frac{\sqrt{-a^2+b^2}\,a^2\log\left(\frac{(2a^2-b^2)\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2+2(a\cos(dx+c)\sin(dx+c)+b\cos(dx+c))\sqrt{-a^2+b^2}}{b^2\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2}\right)+2(a^3-ab^2)dx+}{2(a^2b^2-b^4)d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] [-1/2*(sqrt(-a^2 + b^2)*a^2*log(((2*a^2 - b^2)*cos(d*x + c)^2 - 2*a*b*sin(d
*x + c) - a^2 - b^2 + 2*(a*cos(d*x + c)*sin(d*x + c) + b*cos(d*x + c))*sqrt
(-a^2 + b^2))/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2)) + 2*(a
^3 - a*b^2)*d*x + 2*(a^2*b - b^3)*cos(d*x + c))/((a^2*b^2 - b^4)*d), -(sqrt
(a^2 - b^2)*a^2*arctan(-(a*sin(d*x + c) + b)/(sqrt(a^2 - b^2)*cos(d*x + c))
) + (a^3 - a*b^2)*d*x + (a^2*b - b^3)*cos(d*x + c))/((a^2*b^2 - b^4)*d)]
```

giac [A] time = 0.73, size = 99, normalized size = 1.32

$$\frac{\frac{2\left(\pi\left\lfloor\frac{dx+c}{2\pi}+\frac{1}{2}\right\rfloor\mathrm{sgn}(a)+\arctan\left(\frac{a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+b}{\sqrt{a^2-b^2}}\right)\right)a^2}{\sqrt{a^2-b^2}\,b^2}-\frac{(dx+c)a}{b^2}-\frac{2}{\left(\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2+1\right)b}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] (2*(pi*floor(1/2*(d*x + c)/pi + 1/2)*sgn(a) + arctan((a*tan(1/2*d*x + 1/2*c
) + b)/sqrt(a^2 - b^2)))*a^2/(sqrt(a^2 - b^2)*b^2) - (d*x + c)*a/b^2 - 2/((
tan(1/2*d*x + 1/2*c)^2 + 1)*b))/d
```

maple [A] time = 0.06, size = 96, normalized size = 1.28

$$-\frac{2}{db\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}-\frac{2a\arctan\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,b^2}+\frac{2\arctan\left(\frac{2a\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+2b}{2\sqrt{a^2-b^2}}\right)a^2}{d\,b^2\sqrt{a^2-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] -2/d/b/(1+tan(1/2*d*x+1/2*c)^2)-2/d/b^2*a*arctan(tan(1/2*d*x+1/2*c))+2/d/b^
2/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)/(a^2-b^2)^(1/2))*
a^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [B] time = 2.50, size = 127, normalized size = 1.69

$$-\frac{\cos\left(c+d\,x\right)}{b\,d}-\frac{a\,x}{b^2}-\frac{a^2\,\mathrm{atan}\left(\frac{\left(-\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a^2+\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a\,b+2\,\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,b^2\right)\,1{}\mathrm{i}}{\sqrt{b^2-a^2}\,\left(a\,\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)+2\,b\,\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right)}\right)\,2{}\mathrm{i}}{b^2\,d\,\sqrt{b^2-a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)^2/(a + b*sin(c + d*x)),x)
```

```
[Out] - cos(c + d*x)/(b*d) - (a*x)/b^2 - (a^2*atan(((2*b^2*sin(c/2 + (d*x)/2) - a
^2*sin(c/2 + (d*x)/2) + a*b*cos(c/2 + (d*x)/2))*1i)/((b^2 - a^2)^(1/2)*(a*c
os(c/2 + (d*x)/2) + 2*b*sin(c/2 + (d*x)/2))))*2i)/(b^2*d*(b^2 - a^2)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.228 $\int \frac{(e+fx)^3 \sin^3(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=802

$$\frac{(e+fx)^4}{8bf}+\frac{a^2(e+fx)^4}{4b^3f}+\frac{a\cos(c+dx)(e+fx)^3}{b^2d}+\frac{ia^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)(e+fx)^3}{b^3\sqrt{a^2-b^2}\,d}-\frac{ia^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)(e+f}{b^3\sqrt{a^2-b^2}\,d}$$

```
[Out] -3/4*e*f^2*x/b/d^2-3/8*f^3*x^2/b/d^2+1/4*a^2*(f*x+e)^4/b^3/f+1/8*(f*x+e)^4/
b/f-6*a*f^2*(f*x+e)*cos(d*x+c)/b^2/d^3+a*(f*x+e)^3*cos(d*x+c)/b^2/d+6*a*f^3
*sin(d*x+c)/b^2/d^4-3*a*f*(f*x+e)^2*sin(d*x+c)/b^2/d^2+3/4*f^2*(f*x+e)*cos(
d*x+c)*sin(d*x+c)/b/d^3-1/2*(f*x+e)^3*cos(d*x+c)*sin(d*x+c)/b/d-3/8*f^3*sin
(d*x+c)^2/b/d^4+3/4*f*(f*x+e)^2*sin(d*x+c)^2/b/d^2+6*I*a^3*f^2*(f*x+e)*poly
log(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^3/d^3/(a^2-b^2)^(1/2)+I*a^3
*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^3/d/(a^2-b^2)^(1/
2)+3*a^3*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^3/
d^2/(a^2-b^2)^(1/2)-3*a^3*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-
b^2)^(1/2)))/b^3/d^2/(a^2-b^2)^(1/2)-6*I*a^3*f^2*(f*x+e)*polylog(3,I*b*exp(
I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^3/d^3/(a^2-b^2)^(1/2)-I*a^3*(f*x+e)^3*ln(
1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^3/d/(a^2-b^2)^(1/2)-6*a^3*f^3*p
olylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^3/d^4/(a^2-b^2)^(1/2)+6*
a^3*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^3/d^4/(a^2-b^2)
^(1/2)
```

Rubi [A] time = 1.34, antiderivative size = 802, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 13, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.464, Rules used = {4515, 3311, 32, 3310, 3296, 2637, 3323, 2264, 2190, 2531, 6609, 2282, 6589}

$$\frac{(e+fx)^4}{8bf}+\frac{a^2(e+fx)^4}{4b^3f}+\frac{a\cos(c+dx)(e+fx)^3}{b^2d}+\frac{ia^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)(e+fx)^3}{b^3\sqrt{a^2-b^2}\,d}-\frac{ia^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)(e+f}{b^3\sqrt{a^2-b^2}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sin[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-3*e*f^2*x)/(4*b*d^2) - (3*f^3*x^2)/(8*b*d^2) + (a^2*(e + f*x)^4)/(4*b^3*f
) + (e + f*x)^4/(8*b*f) - (6*a*f^2*(e + f*x)*Cos[c + d*x])/(b^2*d^3) + (a*(
e + f*x)^3*Cos[c + d*x])/(b^2*d) + (I*a^3*(e + f*x)^3*Log[1 - (I*b*E^(I*(c
+ d*x)))/(a - Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b^2]*d) - (I*a^3*(e + f*x)
^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b^
2]*d) + (3*a^3*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2
 - b^2])])/(b^3*Sqrt[a^2 - b^2]*d^2) - (3*a^3*f*(e + f*x)^2*PolyLog[2, (I*b
```

```
*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b^2]*d^2) + ((6*I
)*a^3*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])]
)/(b^3*Sqrt[a^2 - b^2]*d^3) - ((6*I)*a^3*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I
*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b^2]*d^3) - (6*a^3*f^3
*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b
^2]*d^4) + (6*a^3*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2]
)])/(b^3*Sqrt[a^2 - b^2]*d^4) + (6*a*f^3*Sin[c + d*x])/(b^2*d^4) - (3*a*f*(
e + f*x)^2*Sin[c + d*x])/(b^2*d^2) + (3*f^2*(e + f*x)*Cos[c + d*x]*Sin[c +
d*x])/(4*b*d^3) - ((e + f*x)^3*Cos[c + d*x]*Sin[c + d*x])/(2*b*d) - (3*f^3*
Sin[c + d*x]^2)/(8*b*d^4) + (3*f*(e + f*x)^2*Sin[c + d*x]^2)/(4*b*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\sin^3(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\sin^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^3\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^3\cos(c+dx)\sin(c+dx)}{2bd} + \frac{3f(e+fx)^2\sin^2(c+dx)}{4bd^2} - \frac{a\int (e+fx)^3\sin}{b^2}$$

$$= \frac{(e+fx)^4}{8bf} + \frac{a(e+fx)^3\cos(c+dx)}{b^2d} + \frac{3f^2(e+fx)\cos(c+dx)\sin(c+dx)}{4bd^3} - \frac{(e+}{}$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} + \frac{a(e+fx)^3\cos(c+dx)}{b^2d} - \frac{3af(e+}{}$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cos(c+dx)}{b^2d^3} + \frac{a(e+}{}$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cos(c+dx)}{b^2d^3} + \frac{a(e+}{}$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cos(c+dx)}{b^2d^3} + \frac{a(e+}{}$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cos(c+dx)}{b^2d^3} + \frac{a(e+}{}$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cos(c+dx)}{b^2d^3} + \frac{a(e+}{}$$

$$= -\frac{3ef^2x}{4bd^2} - \frac{3f^3x^2}{8bd^2} + \frac{a^2(e+fx)^4}{4b^3f} + \frac{(e+fx)^4}{8bf} - \frac{6af^2(e+fx)\cos(c+dx)}{b^2d^3} + \frac{a(e+}{}$$

Mathematica [B] time = 5.64, size = 1923, normalized size = 2.40

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sin[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (16*a^2*Sqrt[-(a^2 - b^2)^2]*d^4*e^3*x + 8*b^2*Sqrt[-(-a^2 + b^2)^2]*d^4*e^
3*x + 24*a^2*Sqrt[-(a^2 - b^2)^2]*d^4*e^2*f*x^2 + 12*b^2*Sqrt[-(-a^2 + b^2)
```

```
^2]*d^4*e^2*f*x^2 + 16*a^2*Sqrt[-(a^2 - b^2)^2]*d^4*e*f^2*x^3 + 8*b^2*Sqrt[
-(-a^2 + b^2)^2]*d^4*e*f^2*x^3 + 4*a^2*Sqrt[-(a^2 - b^2)^2]*d^4*f^3*x^4 + 2
*b^2*Sqrt[-(-a^2 + b^2)^2]*d^4*f^3*x^4 - 32*a^3*Sqrt[-a^2 + b^2]*d^3*e^3*Ar
cTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + 16*a*b*Sqrt[-(a^2 - b^2)^
2]*d^3*e^3*Cos[c + d*x] - 96*a*b*Sqrt[-(a^2 - b^2)^2]*d*e*f^2*Cos[c + d*x]
+ 48*a*b*Sqrt[-(a^2 - b^2)^2]*d^3*e^2*f*x*Cos[c + d*x] - 96*a*b*Sqrt[-(a^2
- b^2)^2]*d*f^3*x*Cos[c + d*x] + 48*a*b*Sqrt[-(a^2 - b^2)^2]*d^3*e*f^2*x^2*
Cos[c + d*x] + 16*a*b*Sqrt[-(a^2 - b^2)^2]*d^3*f^3*x^3*Cos[c + d*x] - 6*b^2
*Sqrt[-(a^2 - b^2)^2]*d^2*e^2*f*Cos[2*(c + d*x)] + 3*b^2*Sqrt[-(a^2 - b^2)^
2]*f^3*Cos[2*(c + d*x)] - 12*b^2*Sqrt[-(a^2 - b^2)^2]*d^2*e*f^2*x*Cos[2*(c
+ d*x)] - 6*b^2*Sqrt[-(a^2 - b^2)^2]*d^2*f^3*x^2*Cos[2*(c + d*x)] - 48*a^3*
Sqrt[a^2 - b^2]*d^3*e^2*f*x*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2
 + b^2])] - 48*a^3*Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*Log[1 - (b*E^(I*(c + d*x))
)/((-I)*a + Sqrt[-a^2 + b^2])] - 16*a^3*Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log[1 -
 (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 48*a^3*Sqrt[a^2 - b^2]*
d^3*e^2*f*x*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] + 48*a^3*
Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2
+ b^2])] + 16*a^3*Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log[1 + (b*E^(I*(c + d*x)))/(
I*a + Sqrt[-a^2 + b^2])] + (48*I)*a^3*Sqrt[a^2 - b^2]*d^2*f*(e + f*x)^2*Pol
yLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - (48*I)*a^3*Sqrt[
a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-
a^2 + b^2]))] - 96*a^3*Sqrt[a^2 - b^2]*d*e*f^2*PolyLog[3, (b*E^(I*(c + d*x)
))/((-I)*a + Sqrt[-a^2 + b^2])] - 96*a^3*Sqrt[a^2 - b^2]*d*f^3*x*PolyLog[3,
 (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 96*a^3*Sqrt[a^2 - b^2]*
d*e*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] + 96*a^
3*Sqrt[a^2 - b^2]*d*f^3*x*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2
 + b^2]))] - (96*I)*a^3*Sqrt[a^2 - b^2]*f^3*PolyLog[4, (b*E^(I*(c + d*x)))/
((-I)*a + Sqrt[-a^2 + b^2])] + (96*I)*a^3*Sqrt[a^2 - b^2]*f^3*PolyLog[4, -(
(b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] - 48*a*b*Sqrt[-(a^2 - b^2)^2
]*d^2*e^2*f*Sin[c + d*x] + 96*a*b*Sqrt[-(a^2 - b^2)^2]*f^3*Sin[c + d*x] - 9
6*a*b*Sqrt[-(a^2 - b^2)^2]*d^2*e*f^2*x*Sin[c + d*x] - 48*a*b*Sqrt[-(a^2 - b
^2)^2]*d^2*f^3*x^2*Sin[c + d*x] - 4*b^2*Sqrt[-(a^2 - b^2)^2]*d^3*e^3*Sin[2*
(c + d*x)] + 6*b^2*Sqrt[-(a^2 - b^2)^2]*d*e*f^2*Sin[2*(c + d*x)] - 12*b^2*S
qrt[-(a^2 - b^2)^2]*d^3*e^2*f*x*Sin[2*(c + d*x)] + 6*b^2*Sqrt[-(a^2 - b^2)^
2]*d*f^3*x*Sin[2*(c + d*x)] - 12*b^2*Sqrt[-(a^2 - b^2)^2]*d^3*e*f^2*x^2*Sin
[2*(c + d*x)] - 4*b^2*Sqrt[-(a^2 - b^2)^2]*d^3*f^3*x^3*Sin[2*(c + d*x)])/(1
6*b^3*Sqrt[-(a^2 - b^2)^2]*d^4)
```

fricas [C] time = 0.89, size = 3028, normalized size = 3.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/8*((2*a^4 - a^2*b^2 - b^4)*d^4*f^3*x^4 + 4*(2*a^4 - a^2*b^2 - b^4)*d^4*e*
f^2*x^3 + 24*I*a^3*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d
*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2))/b) - 24*I*a^3*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(
2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c
))*sqrt(-(a^2 - b^2)/b^2))/b) - 24*I*a^3*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polyl
og(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b
*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 24*I*a^3*b*f^3*sqrt(-(a^2 - b^2
)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*
x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 3*(2*(2*a^4 - a^2*b
^2 - b^4)*d^4*e^2*f + (a^2*b^2 - b^4)*d^2*f^3)*x^2 - 3*(2*(a^2*b^2 - b^4)*d
^2*f^3*x^2 + 4*(a^2*b^2 - b^4)*d^2*e*f^2*x + 2*(a^2*b^2 - b^4)*d^2*e^2*f -
(a^2*b^2 - b^4)*f^3)*cos(d*x + c)^2 - 2*(6*I*a^3*b*d^2*f^3*x^2 + 12*I*a^3*b
*d^2*e*f^2*x + 6*I*a^3*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*
a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(-6*I*a^3*b*d^2*f^3*x^2 - 12*I*a^3*
b*d^2*e*f^2*x - 6*I*a^3*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I
*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*
sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(-6*I*a^3*b*d^2*f^3*x^2 - 12*I*a^3
*b*d^2*e*f^2*x - 6*I*a^3*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2
*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(6*I*a^3*b*d^2*f^3*x^2 + 12*I*a^
3*b*d^2*e*f^2*x + 6*I*a^3*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-
2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c
))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 4*(a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*
e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(2*b
*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) -
4*(a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^
3)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*s
qrt(-(a^2 - b^2)/b^2) - 2*I*a) + 4*(a^3*b*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3
*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x
 + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 4*(a^3*b
*d^3*e^3 - 3*a^3*b*c*d^2*e^2*f + 3*a^3*b*c^2*d*e*f^2 - a^3*b*c^3*f^3)*sqrt(
-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a
^2 - b^2)/b^2) - 2*I*a) - 4*(a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*
a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f
^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) +
 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 4
*(a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b
*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*
log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*si
n(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 4*(a^3*b*d^3*f^3*x^3 + 3*a^3
*b*d^3*e*f^2*x^2 + 3*a^3*b*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*
d*e*f^2 + a^3*b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c
) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b
```

```
^2)/b^2) + 2*b)/b) + 4*(a^3*b*d^3*f^3*x^3 + 3*a^3*b*d^3*e*f^2*x^2 + 3*a^3*b
*d^3*e^2*f*x + 3*a^3*b*c*d^2*e^2*f - 3*a^3*b*c^2*d*e*f^2 + a^3*b*c^3*f^3)*s
qrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(
b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 24*(a
^3*b*d*f^3*x + a^3*b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*
cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2))/b) - 24*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*sqrt(-(a^2 - b
^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d
*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 24*(a^3*b*d*f^3*x
+ a^3*b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c)
 - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^
2)/b^2))/b) - 24*(a^3*b*d*f^3*x + a^3*b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*pol
ylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I
*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(2*(2*a^4 - a^2*b^2 - b^4)*
d^4*e^3 + 3*(a^2*b^2 - b^4)*d^2*e*f^2)*x + 8*((a^3*b - a*b^3)*d^3*f^3*x^3 +
 3*(a^3*b - a*b^3)*d^3*e*f^2*x^2 + (a^3*b - a*b^3)*d^3*e^3 - 6*(a^3*b - a*b
^3)*d*e*f^2 + 3*((a^3*b - a*b^3)*d^3*e^2*f - 2*(a^3*b - a*b^3)*d*f^3)*x)*co
s(d*x + c) - 2*(12*(a^3*b - a*b^3)*d^2*f^3*x^2 + 24*(a^3*b - a*b^3)*d^2*e*f
^2*x + 12*(a^3*b - a*b^3)*d^2*e^2*f - 24*(a^3*b - a*b^3)*f^3 + (2*(a^2*b^2
- b^4)*d^3*f^3*x^3 + 6*(a^2*b^2 - b^4)*d^3*e*f^2*x^2 + 2*(a^2*b^2 - b^4)*d^
3*e^3 - 3*(a^2*b^2 - b^4)*d*e*f^2 + 3*(2*(a^2*b^2 - b^4)*d^3*e^2*f - (a^2*b
^2 - b^4)*d*f^3)*x)*cos(d*x + c))*sin(d*x + c))/((a^2*b^3 - b^5)*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \sin(dx+c)^3}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sin(d*x + c)^3/(b*sin(d*x + c) + a), x)
```

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \left(\sin^3(dx+c)\right)}{a+b\sin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sin(d*x+c)^3/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*sin(d*x+c)^3/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^3*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sin(d*x+c)**3/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.229 $\int \frac{(e+fx)^2\sin^3(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=592

$$\frac{a^2(e+fx)^3}{3b^3f}+\frac{2ia^3f^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^3\sqrt{a^2-b^2}}-\frac{2ia^3f^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^3d^3\sqrt{a^2-b^2}}+\frac{2a^3f(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^2\sqrt{a^2-b^2}}-\frac{2a^3f(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+}}{a+\sqrt{a^2}}\right.}{b^3d^2\sqrt{a^2-b^2}}$$

```
[Out] -1/4*f^2*x/b/d^2+1/3*a^2*(f*x+e)^3/b^3/f+1/6*(f*x+e)^3/b/f-2*a*f^2*cos(d*x+
c)/b^2/d^3+a*(f*x+e)^2*cos(d*x+c)/b^2/d-2*a*f*(f*x+e)*sin(d*x+c)/b^2/d^2+1/
4*f^2*cos(d*x+c)*sin(d*x+c)/b/d^3-1/2*(f*x+e)^2*cos(d*x+c)*sin(d*x+c)/b/d+1
/2*f*(f*x+e)*sin(d*x+c)^2/b/d^2+I*a^3*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-
(a^2-b^2)^(1/2)))/b^3/d/(a^2-b^2)^(1/2)-I*a^3*(f*x+e)^2*ln(1-I*b*exp(I*(d*x
+c))/(a+(a^2-b^2)^(1/2)))/b^3/d/(a^2-b^2)^(1/2)+2*a^3*f*(f*x+e)*polylog(2,I
*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^3/d^2/(a^2-b^2)^(1/2)-2*a^3*f*(f*x
+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^3/d^2/(a^2-b^2)^(1/
2)+2*I*a^3*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^3/d^3/(a
^2-b^2)^(1/2)-2*I*a^3*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))
/b^3/d^3/(a^2-b^2)^(1/2)
```

Rubi [A] time = 1.18, antiderivative size = 592, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 13, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.464, Rules used = {4515, 3311, 32, 2635, 8, 3296, 2638, 3323, 2264, 2190, 2531, 2282, 6589}

$$\frac{2a^3f(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^2\sqrt{a^2-b^2}}-\frac{2a^3f(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^3d^2\sqrt{a^2-b^2}}+\frac{2ia^3f^2\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^3\sqrt{a^2-b^2}}-\frac{2ia^3f^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sin[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(f^2*x)/(4*b*d^2) + (a^2*(e + f*x)^3)/(3*b^3*f) + (e + f*x)^3/(6*b*f) - (2
*a*f^2*Cos[c + d*x])/(b^2*d^3) + (a*(e + f*x)^2*Cos[c + d*x])/(b^2*d) + (I*
a^3*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^3*
Sqrt[a^2 - b^2]*d) - (I*a^3*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a +
Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b^2]*d) + (2*a^3*f*(e + f*x)*PolyLog[2,
(I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b^2]*d^2) - (
2*a^3*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/
(b^3*Sqrt[a^2 - b^2]*d^2) + ((2*I)*a^3*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))
/(a - Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b^2]*d^3) - ((2*I)*a^3*f^2*PolyLog
[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b^2]*d^3)
 - (2*a*f*(e + f*x)*Sin[c + d*x])/(b^2*d^2) + (f^2*Cos[c + d*x]*Sin[c + d*x
```

```
])/(4*b*d^3) - ((e + f*x)^2*Cos[c + d*x]*Sin[c + d*x])/(2*b*d) + (f*(e + f*
x)*Sin[c + d*x]^2)/(2*b*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\sin^3(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\sin^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)^2\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)^2\cos(c+dx)\sin(c+dx)}{2bd} + \frac{f(e+fx)\sin^2(c+dx)}{2bd^2} - \frac{a\int (e+fx)^2\sin(c}{b^2}$$

$$= \frac{(e+fx)^3}{6bf} + \frac{a(e+fx)^2\cos(c+dx)}{b^2d} + \frac{f^2\cos(c+dx)\sin(c+dx)}{4bd^3} - \frac{(e+fx)^2\cos}{}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} + \frac{a(e+fx)^2\cos(c+dx)}{b^2d} - \frac{2af(e+fx)\sin(c}{b^2d^2}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{2af^2\cos(c+dx)}{b^2d^3} + \frac{a(e+fx)^2\cos(c+dx)}{b^2d}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{2af^2\cos(c+dx)}{b^2d^3} + \frac{a(e+fx)^2\cos(c+dx)}{b^2d}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{2af^2\cos(c+dx)}{b^2d^3} + \frac{a(e+fx)^2\cos(c+dx)}{b^2d}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{2af^2\cos(c+dx)}{b^2d^3} + \frac{a(e+fx)^2\cos(c+dx)}{b^2d}$$

$$= -\frac{f^2x}{4bd^2} + \frac{a^2(e+fx)^3}{3b^3f} + \frac{(e+fx)^3}{6bf} - \frac{2af^2\cos(c+dx)}{b^2d^3} + \frac{a(e+fx)^2\cos(c+dx)}{b^2d}$$

Mathematica [A] time = 4.05, size = 1166, normalized size = 1.97

$$-48\sqrt{b^2-a^2}\,d^2e^2\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right)a^3 - 24\sqrt{a^2-b^2}\,d^2f^2x^2\log\left(1-\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)a^3 - 48\sqrt{a^2-b^2}\,d^2efx\log\left(1-\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sin[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (24*a^2*Sqrt[-(a^2 - b^2)^2]*d^3*e^2*x + 12*b^2*Sqrt[-(-a^2 + b^2)^2]*d^3*e
^2*x + 24*a^2*Sqrt[-(a^2 - b^2)^2]*d^3*e*f*x^2 + 12*b^2*Sqrt[-(-a^2 + b^2)^
2]*d^3*e*f*x^2 + 8*a^2*Sqrt[-(a^2 - b^2)^2]*d^3*f^2*x^3 + 4*b^2*Sqrt[-(-a^2
 + b^2)^2]*d^3*f^2*x^3 - 48*a^3*Sqrt[-a^2 + b^2]*d^2*e^2*ArcTan[(I*a + b*E^
(I*(c + d*x)))/Sqrt[a^2 - b^2]] + 24*a*b*Sqrt[-(a^2 - b^2)^2]*d^2*e^2*Cos[c
 + d*x] - 48*a*b*Sqrt[-(a^2 - b^2)^2]*f^2*Cos[c + d*x] + 48*a*b*Sqrt[-(a^2
- b^2)^2]*d^2*e*f*x*Cos[c + d*x] + 24*a*b*Sqrt[-(a^2 - b^2)^2]*d^2*f^2*x^2*
Cos[c + d*x] - 6*b^2*Sqrt[-(a^2 - b^2)^2]*d*e*f*Cos[2*(c + d*x)] - 6*b^2*Sq
rt[-(a^2 - b^2)^2]*d*f^2*x*Cos[2*(c + d*x)] - 48*a^3*Sqrt[a^2 - b^2]*d^2*e*
f*x*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 24*a^3*Sqrt[
a^2 - b^2]*d^2*f^2*x^2*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^
2])] + 48*a^3*Sqrt[a^2 - b^2]*d^2*e*f*x*Log[1 + (b*E^(I*(c + d*x)))/(I*a +
Sqrt[-a^2 + b^2])] + 24*a^3*Sqrt[a^2 - b^2]*d^2*f^2*x^2*Log[1 + (b*E^(I*(c
+ d*x)))/(I*a + Sqrt[-a^2 + b^2])] + (48*I)*a^3*Sqrt[a^2 - b^2]*d*f*(e + f*
x)*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - (48*I)*a^3
*Sqrt[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, -((b*E^(I*(c + d*x)))/(I*a + Sqrt
[-a^2 + b^2]))] - 48*a^3*Sqrt[a^2 - b^2]*f^2*PolyLog[3, (b*E^(I*(c + d*x)))
/((-I)*a + Sqrt[-a^2 + b^2])] + 48*a^3*Sqrt[a^2 - b^2]*f^2*PolyLog[3, -((b*
E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] - 48*a*b*Sqrt[-(a^2 - b^2)^2]*d
*e*f*Sin[c + d*x] - 48*a*b*Sqrt[-(a^2 - b^2)^2]*d*f^2*x*Sin[c + d*x] - 6*b^
2*Sqrt[-(a^2 - b^2)^2]*d^2*e^2*Sin[2*(c + d*x)] + 3*b^2*Sqrt[-(a^2 - b^2)^2
]*f^2*Sin[2*(c + d*x)] - 12*b^2*Sqrt[-(a^2 - b^2)^2]*d^2*e*f*x*Sin[2*(c + d
*x)] - 6*b^2*Sqrt[-(a^2 - b^2)^2]*d^2*f^2*x^2*Sin[2*(c + d*x)])/(24*b^3*Sqr
t[-(a^2 - b^2)^2]*d^3)
```

fricas [C] time = 0.73, size = 2064, normalized size = 3.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/12*(2*(2*a^4 - a^2*b^2 - b^4)*d^3*f^2*x^3 + 6*(2*a^4 - a^2*b^2 - b^4)*d^3
*e*f*x^2 + 12*a^3*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*
x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^
2 - b^2)/b^2))/b) - 12*a^3*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I
*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*
sqrt(-(a^2 - b^2)/b^2))/b) + 12*a^3*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3,
 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(
d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*a^3*b*f^2*sqrt(-(a^2 - b^2)/b^2)*
polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c)
- I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*((a^2*b^2 - b^4)*d*f^2*x
 + (a^2*b^2 - b^4)*d*e*f)*cos(d*x + c)^2 - 2*(6*I*a^3*b*d*f^2*x + 6*I*a^3*b
```

```
*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x
 + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)
/b + 1) - 2*(-6*I*a^3*b*d*f^2*x - 6*I*a^3*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*d
ilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*
sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(-6*I*a^3*b*d*f^2*x
- 6*I*a^3*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) +
 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2) + 2*b)/b + 1) - 2*(6*I*a^3*b*d*f^2*x + 6*I*a^3*b*d*e*f)*sqrt(-(a^2 -
b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x
 + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 6*(a^3*b*d
^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*co
s(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 6*(
a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log
(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a
) + 6*(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b
^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2)
 + 2*I*a) + 6*(a^3*b*d^2*e^2 - 2*a^3*b*c*d*e*f + a^3*b*c^2*f^2)*sqrt(-(a^2
- b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b
^2)/b^2) - 2*I*a) - 6*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*
e*f - a^3*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2
*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2) + 2*b)/b) + 6*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f
- a^3*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*s
in(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
+ 2*b)/b) - 6*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^
3*b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(
d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2
*b)/b) + 6*(a^3*b*d^2*f^2*x^2 + 2*a^3*b*d^2*e*f*x + 2*a^3*b*c*d*e*f - a^3*b
*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x
 + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)
/b) + 3*(2*(2*a^4 - a^2*b^2 - b^4)*d^3*e^2 + (a^2*b^2 - b^4)*d*f^2)*x + 12*
((a^3*b - a*b^3)*d^2*f^2*x^2 + 2*(a^3*b - a*b^3)*d^2*e*f*x + (a^3*b - a*b^3
)*d^2*e^2 - 2*(a^3*b - a*b^3)*f^2)*cos(d*x + c) - 3*(8*(a^3*b - a*b^3)*d*f^
2*x + 8*(a^3*b - a*b^3)*d*e*f + (2*(a^2*b^2 - b^4)*d^2*f^2*x^2 + 4*(a^2*b^2
 - b^4)*d^2*e*f*x + 2*(a^2*b^2 - b^4)*d^2*e^2 - (a^2*b^2 - b^4)*f^2)*cos(d*
x + c))*sin(d*x + c))/((a^2*b^3 - b^5)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\sin\left(dx+c\right)^{3}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="giac")
```

[Out] integrate((f*x + e)^2*sin(d*x + c)^3/(b*sin(d*x + c) + a), x)

maple [F] time = 0.65, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 (\sin^3 (dx+c))}{a+b\sin (dx+c)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f*x+e)^2*sin(d*x+c)^3/(a+b*sin(d*x+c)),x)

[Out] int((f*x+e)^2*sin(d*x+c)^3/(a+b*sin(d*x+c)),x)

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^2*sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="maxima")

[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

[In] int((sin(c + d*x)^3*(e + f*x)^2)/(a + b*sin(c + d*x)),x)

[Out] \text{Hanged}

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)**2*sin(d*x+c)**3/(a+b*sin(d*x+c)),x)

[Out] Timed out

3.230 $\int \frac{(e+fx)\sin^3(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=382

$$\frac{a^2ex}{b^3}+\frac{a^2fx^2}{2b^3}+\frac{a^3f\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^2\sqrt{a^2-b^2}}-\frac{a^3f\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^3d^2\sqrt{a^2-b^2}}+\frac{ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d\sqrt{a^2-b^2}}-\frac{ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}\cdots}\right)}{b^3d\sqrt{a^2-b^2}}$$

```
[Out] a^2*e*x/b^3+1/2*e*x/b+1/2*a^2*f*x^2/b^3+1/4*f*x^2/b+a*(f*x+e)*cos(d*x+c)/b^
2/d-a*f*sin(d*x+c)/b^2/d^2-1/2*(f*x+e)*cos(d*x+c)*sin(d*x+c)/b/d+1/4*f*sin(
d*x+c)^2/b/d^2+I*a^3*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b
^3/d/(a^2-b^2)^(1/2)-I*a^3*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/
2)))/b^3/d/(a^2-b^2)^(1/2)+a^3*f*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^
(1/2)))/b^3/d^2/(a^2-b^2)^(1/2)-a^3*f*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-
b^2)^(1/2)))/b^3/d^2/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.67, antiderivative size = 382, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {4515, 3310, 3296, 2637, 3323, 2264, 2190, 2279, 2391}

$$\frac{a^3f\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^2\sqrt{a^2-b^2}}-\frac{a^3f\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^3d^2\sqrt{a^2-b^2}}+\frac{ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d\sqrt{a^2-b^2}}-\frac{ia^3(e+fx)\log\left(1-\frac{ib\cdots}{\sqrt{a\cdots}}\right)}{b^3d\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sin[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (a^2*e*x)/b^3 + (e*x)/(2*b) + (a^2*f*x^2)/(2*b^3) + (f*x^2)/(4*b) + (a*(e +
 f*x)*Cos[c + d*x])/(b^2*d) + (I*a^3*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x))
)/(a - Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b^2]*d) - (I*a^3*(e + f*x)*Log[1
- (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^2 - b^2]*d) + (
a^3*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^3*Sqrt[a^
2 - b^2]*d^2) - (a^3*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2
])])/(b^3*Sqrt[a^2 - b^2]*d^2) - (a*f*Sin[c + d*x])/(b^2*d^2) - ((e + f*x)*
Cos[c + d*x]*Sin[c + d*x])/(2*b*d) + (f*Sin[c + d*x]^2)/(4*b*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4515

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sin[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/b, Int[(e + f*x)^m*Sin[c +
d*x]^(n - 1), x], x] - Dist[a/b, Int[((e + f*x)^m*Sin[c + d*x]^(n - 1))/(a
+ b*Sin[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &&
IGtQ[n, 0]
```

Rubi steps

$$\int \frac{(e+fx)\sin^3(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\sin^2(c+dx)\,dx}{b} - \frac{a\int \frac{(e+fx)\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx}{b}$$

$$= -\frac{(e+fx)\cos(c+dx)\sin(c+dx)}{2bd} + \frac{f\sin^2(c+dx)}{4bd^2} - \frac{a\int (e+fx)\sin(c+dx)\,dx}{b^2}$$

$$= \frac{ex}{2b} + \frac{fx^2}{4b} + \frac{a(e+fx)\cos(c+dx)}{b^2d} - \frac{(e+fx)\cos(c+dx)\sin(c+dx)}{2bd} + \frac{f\sin^2(c}{4bd^2}$$

$$= \frac{a^2ex}{b^3} + \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} + \frac{fx^2}{4b} + \frac{a(e+fx)\cos(c+dx)}{b^2d} - \frac{af\sin(c+dx)}{b^2d^2} - (e+fx)\,c$$

$$= \frac{a^2ex}{b^3} + \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} + \frac{fx^2}{4b} + \frac{a(e+fx)\cos(c+dx)}{b^2d} - \frac{af\sin(c+dx)}{b^2d^2} - (e+fx)\,c$$

$$= \frac{a^2ex}{b^3} + \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} + \frac{fx^2}{4b} + \frac{a(e+fx)\cos(c+dx)}{b^2d} + \frac{ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx}}{a-\sqrt{a^2-b}}\right.}{b^3\sqrt{a^2-b^2}\,d}$$

$$= \frac{a^2ex}{b^3} + \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} + \frac{fx^2}{4b} + \frac{a(e+fx)\cos(c+dx)}{b^2d} + \frac{ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx}}{a-\sqrt{a^2-b}}\right.}{b^3\sqrt{a^2-b^2}\,d}$$

$$= \frac{a^2ex}{b^3} + \frac{ex}{2b} + \frac{a^2fx^2}{2b^3} + \frac{fx^2}{4b} + \frac{a(e+fx)\cos(c+dx)}{b^2d} + \frac{ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx}}{a-\sqrt{a^2-b}}\right.}{b^3\sqrt{a^2-b^2}\,d}$$

Mathematica [A] time = 8.74, size = 752, normalized size = 1.97

$$-\frac{2\left(2a^2+b^2\right)(c+dx)(cf-d(2e+fx))+\frac{8a^3d(e+fx)\left(\frac{2(de-cf)\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}}-\frac{if\left(\text{Li}_2\left(\frac{a\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)}{a+i\left(b+\sqrt{b^2-a^2}\right)}\right)+\log\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)\log}{\sqrt{b^2-a^2}}\right.}{}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Sin[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/8*(2*(2*a^2 + b^2)*(c + d*x)*(c*f - d*(2*e + f*x)) - 8*a*b*d*(e + f*x)*C
os[c + d*x] + b^2*f*Cos[2*(c + d*x)] + (8*a^3*d*(e + f*x)*((2*(d*e - c*f)*A
rcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] - (I*f*(Lo
g[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(
(-I)*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 - I*Tan[(c + d*x)/2]))/(
a + I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1 + I*Tan[(c
+ d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[
-a^2 + b^2])] + PolyLog[2, (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a
^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(-b
 + Sqrt[-a^2 + b^2] - a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2])] + P
olyLog[2, (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])]))/Sqrt[-
a^2 + b^2] - (I*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b - Sqrt[-a^2 + b^2] +
a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])] + PolyLog[2, (a + I*a*Tan
[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2]))/(d*e -
 c*f + I*f*Log[1 - I*Tan[(c + d*x)/2]] - I*f*Log[1 + I*Tan[(c + d*x)/2]]) +
 8*a*b*f*Sin[c + d*x] + 2*b^2*d*(e + f*x)*Sin[2*(c + d*x)])/(b^3*d^2)
```

fricas [B] time = 0.70, size = 1255, normalized size = 3.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(2*I*a^3*b*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2
*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2) + 2*b)/b + 1) - 2*I*a^3*b*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*co
s(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*I*a^3*b*f*sqrt(-(a^2 - b^2)/b^2)*dilog(
-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(
d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*a^3*b*f*sqrt(-(a^2 - b
```

```
^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x
+ c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (2*a^4 - a^
2*b^2 - b^4)*d^2*f*x^2 - 2*(2*a^4 - a^2*b^2 - b^4)*d^2*e*x + (a^2*b^2 - b^4
)*f*cos(d*x + c)^2 + 2*(a^3*b*d*e - a^3*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2
*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)
+ 2*(a^3*b*d*e - a^3*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2
*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(a^3*b*d*e - a^
3*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c)
+ 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(a^3*b*d*e - a^3*b*c*f)*sqrt(-(a^
2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 -
 b^2)/b^2) - 2*I*a) + 2*(a^3*b*d*f*x + a^3*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*lo
g(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(
d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(a^3*b*d*f*x + a^3*b*c*f)*sq
rt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*
cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(a^3*
b*d*f*x + a^3*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) +
2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/
b^2) + 2*b)/b) - 2*(a^3*b*d*f*x + a^3*b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2
*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 4*((a^3*b - a*b^3)*d*f*x + (a^3*b
- a*b^3)*d*e)*cos(d*x + c) + 2*(2*(a^3*b - a*b^3)*f + ((a^2*b^2 - b^4)*d*f*
x + (a^2*b^2 - b^4)*d*e)*cos(d*x + c))*sin(d*x + c))/((a^2*b^3 - b^5)*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\sin\left(dx+c\right)^{3}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sin(d*x + c)^3/(b*sin(d*x + c) + a), x)
```

maple [B] time = 0.75, size = 686, normalized size = 1.80

$$\frac{a^{2} f\,x^{2}}{2 b^{3}}+\frac{f\,x^{2}}{4 b}+\frac{a^{2} e x}{b^{3}}+\frac{e x}{2 b}+\frac{a \left(d f x+d e+i f\right) {\mathrm e}^{i \left(d x+c\right)}}{2 b^{2} d^{2}}+\frac{a \left(d f x+d e-i f\right) {\mathrm e}^{-i \left(d x+c\right)}}{2 b^{2} d^{2}}+\frac{2 i a^{3} f c \arctan\left(\frac{2 i b\,{\mathrm e}^{i \left(d x+c\right)}-2 a}{2 \sqrt{-a^{2}+b^{2}}}\right)}{b^{3} d^{2} \sqrt{-a^{2}+b^{2}}}-\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sin(d*x+c)^3/(a+b*sin(d*x+c)),x)
```

```
[Out] 1/2*a^2*f*x^2/b^3+1/4*f*x^2/b+a^2*e*x/b^3+1/2*e*x/b+1/2*a*(d*f*x+I*f+d*e)/b
^2/d^2*exp(I*(d*x+c))+1/2*a*(d*f*x-I*f+d*e)/b^2/d^2*exp(-I*(d*x+c))-I*a^3/b
```

```
^3/d^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*
a+(-a^2+b^2)^(1/2)))-a^3/b^3/d*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))-
(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x-a^3/b^3/d^2*f/(-a^2+b^2)^(1/2)*
ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c+a^3/b^
3/d*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^
2+b^2)^(1/2)))*x+a^3/b^3/d^2*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-
a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c+2*I*a^3/b^3/d^2*f*c/(-a^2+b^2)^(1
/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))+I*a^3/b^3/d^2*f
/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+
b^2)^(1/2)))-2*I*a^3/b^3/d*e/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+
c))-2*a)/(-a^2+b^2)^(1/2))-1/8*f/d^2/b*cos(2*d*x+2*c)-1/4*(f*x+e)/d/b*sin(2
*d*x+2*c)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^3*(e + f*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)**3/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.231 $\int \frac{\sin^3(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=107

$$\frac{x\left(2a^2+b^2\right)}{2b^3}-\frac{2a^3\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{b^3d\sqrt{a^2-b^2}}+\frac{a\cos(c+dx)}{b^2d}-\frac{\sin(c+dx)\cos(c+dx)}{2bd}$$

```
[Out] 1/2*(2*a^2+b^2)*x/b^3+a*cos(d*x+c)/b^2/d-1/2*cos(d*x+c)*sin(d*x+c)/b/d-2*a^
3*arctan((b+a*tan(1/2*d*x+1/2*c))/(a^2-b^2)^(1/2))/b^3/d/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2793, 3023, 2735, 2660, 618, 204}

$$-\frac{2a^3\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{b^3d\sqrt{a^2-b^2}}+\frac{x\left(2a^2+b^2\right)}{2b^3}+\frac{a\cos(c+dx)}{b^2d}-\frac{\sin(c+dx)\cos(c+dx)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[Sin[c + d*x]^3/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((2*a^2 + b^2)*x)/(2*b^3) - (2*a^3*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2
 - b^2]])/(b^3*Sqrt[a^2 - b^2]*d) + (a*Cos[c + d*x])/(b^2*d) - (Cos[c + d*x
]*Sin[c + d*x])/(2*b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
```

```
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2793

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b^2*Cos[e + f*x]*(a + b*Sin[e + f*x
])^(m - 2)*(c + d*Sin[e + f*x])^(n + 1))/(d*f*(m + n)), x] + Dist[1/(d*(m +
 n)), Int[(a + b*Sin[e + f*x])^(m - 3)*(c + d*Sin[e + f*x])^n*Simp[a^3*d*(m
 + n) + b^2*(b*c*(m - 2) + a*d*(n + 1)) - b*(a*b*c - b^2*d*(m + n - 1) - 3*
a^2*d*(m + n))*Sin[e + f*x] - b^2*(b*c*(m - 1) - a*d*(3*m + 2*n - 2))*Sin[e
 + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d,
0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && GtQ[m, 2] && (IntegerQ[m] |
| IntegersQ[2*m, 2*n]) &&  !(IGtQ[n, 2] && ( !IntegerQ[m] || (EqQ[a, 0] &&
NeQ[c, 0])))
```

Rule 3023

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_.)*((A_.) + (B_.)*sin[(e_.)
+ (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^2), x_Symbol] :> -Simp[(C*Cos
[e + f*x]*(a + b*Sin[e + f*x])^(m + 1))/(b*f*(m + 2)), x] + Dist[1/(b*(m +
2)), Int[(a + b*Sin[e + f*x])^m*Simp[A*b*(m + 2) + b*C*(m + 1) + (b*B*(m +
2) - a*C)*Sin[e + f*x], x], x], x] /; FreeQ[{a, b, e, f, A, B, C, m}, x] &&
  !LtQ[m, -1]
```

Rubi steps

$$\int \frac{\sin^3(c+dx)}{a+b\sin(c+dx)}\,dx = -\frac{\cos(c+dx)\sin(c+dx)}{2bd} + \frac{\int \frac{a+b\sin(c+dx)-2a\sin^2(c+dx)}{a+b\sin(c+dx)}\,dx}{2b}$$

$$= \frac{a\cos(c+dx)}{b^2d} - \frac{\cos(c+dx)\sin(c+dx)}{2bd} + \frac{\int \frac{ab+(2a^2+b^2)\sin(c+dx)}{a+b\sin(c+dx)}\,dx}{2b^2}$$

$$= \frac{(2a^2+b^2)x}{2b^3} + \frac{a\cos(c+dx)}{b^2d} - \frac{\cos(c+dx)\sin(c+dx)}{2bd} - \frac{a^3\int \frac{1}{a+b\sin(c+dx)}\,dx}{b^3}$$

$$= \frac{(2a^2+b^2)x}{2b^3} + \frac{a\cos(c+dx)}{b^2d} - \frac{\cos(c+dx)\sin(c+dx)}{2bd} - \frac{(2a^3)\,\text{Subst}\left(\int \frac{1}{a+2bx+ax^2}\,dx\right.}{b^3d}$$

$$= \frac{(2a^2+b^2)x}{2b^3} + \frac{a\cos(c+dx)}{b^2d} - \frac{\cos(c+dx)\sin(c+dx)}{2bd} + \frac{(4a^3)\,\text{Subst}\left(\int \frac{1}{-4(a^2-b^2)-x^2}\right.}{}$$

$$= \frac{(2a^2+b^2)x}{2b^3} - \frac{2a^3\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b^3\sqrt{a^2-b^2}\,d} + \frac{a\cos(c+dx)}{b^2d} - \frac{\cos(c+dx)\sin(c+dx)}{2bd}$$

Mathematica [A] time = 0.28, size = 97, normalized size = 0.91

$$\frac{2(2a^2+b^2)(c+dx) - \frac{8a^3\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}} + 4ab\cos(c+dx) - b^2\sin(2(c+dx))}{4b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sin[c + d*x]^3/(a + b*Sin[c + d*x]),x]
```

```
[Out] (2*(2*a^2 + b^2)*(c + d*x) - (8*a^3*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^
2 - b^2]])/Sqrt[a^2 - b^2] + 4*a*b*Cos[c + d*x] - b^2*Sin[2*(c + d*x)])/(4*
b^3*d)
```

fricas [A] time = 0.59, size = 359, normalized size = 3.36

$$\left[-\frac{\sqrt{-a^2+b^2}\,a^3\log\left(-\frac{(2a^2-b^2)\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2-2(a\cos(dx+c)\sin(dx+c)+b\cos(dx+c))\sqrt{-a^2+b^2}}{b^2\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2}\right) - \left(2a^4-a^2b^2-\right.}{2(a^2b^3-b^5)d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] [-1/2*(sqrt(-a^2 + b^2)*a^3*log(-((2*a^2 - b^2)*cos(d*x + c)^2 - 2*a*b*sin(
d*x + c) - a^2 - b^2 - 2*(a*cos(d*x + c)*sin(d*x + c) + b*cos(d*x + c))*sqr
t(-a^2 + b^2))/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2)) - (2*
a^4 - a^2*b^2 - b^4)*d*x + (a^2*b^2 - b^4)*cos(d*x + c)*sin(d*x + c) - 2*(a
^3*b - a*b^3)*cos(d*x + c))/((a^2*b^3 - b^5)*d), 1/2*(2*sqrt(a^2 - b^2)*a^3
*arctan(-(a*sin(d*x + c) + b)/(sqrt(a^2 - b^2)*cos(d*x + c))) + (2*a^4 - a^
2*b^2 - b^4)*d*x - (a^2*b^2 - b^4)*cos(d*x + c)*sin(d*x + c) + 2*(a^3*b - a
*b^3)*cos(d*x + c))/((a^2*b^3 - b^5)*d)]
```

giac [A] time = 0.32, size = 151, normalized size = 1.41

$$-\frac{\frac{4\left(\pi\left\lfloor\frac{dx+c}{2\pi}+\frac{1}{2}\right\rfloor\operatorname{sgn}(a)+\arctan\left(\frac{a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+b}{\sqrt{a^2-b^2}}\right)\right)a^3}{\sqrt{a^2-b^2}\,b^3}-\frac{(2a^2+b^2)(dx+c)}{b^3}-\frac{2\left(b\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^3+2a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2-b\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+2a\right)}{\left(\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2+1\right)^2b^2}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(4*(pi*floor(1/2*(d*x + c)/pi + 1/2)*sgn(a) + arctan((a*tan(1/2*d*x +
1/2*c) + b)/sqrt(a^2 - b^2)))*a^3/(sqrt(a^2 - b^2)*b^3) - (2*a^2 + b^2)*(d*
x + c)/b^3 - 2*(b*tan(1/2*d*x + 1/2*c)^3 + 2*a*tan(1/2*d*x + 1/2*c)^2 - b*t
an(1/2*d*x + 1/2*c) + 2*a)/((tan(1/2*d*x + 1/2*c)^2 + 1)^2*b^2))/d
```

maple [B] time = 0.06, size = 216, normalized size = 2.02

$$\frac{\tan^3\left(\frac{dx}{2}+\frac{c}{2}\right)}{db\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}+\frac{2\left(\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a}{d\,b^2\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}-\frac{\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}{db\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}+\frac{2a}{d\,b^2\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}+\frac{2\arctan}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(d*x+c)^3/(a+b*sin(d*x+c)),x)
```

```
[Out] 1/d/b/(1+tan(1/2*d*x+1/2*c)^2)^2*tan(1/2*d*x+1/2*c)^3+2/d/b^2/(1+tan(1/2*d*
x+1/2*c)^2)^2*tan(1/2*d*x+1/2*c)^2*a-1/d/b/(1+tan(1/2*d*x+1/2*c)^2)^2*tan(1
/2*d*x+1/2*c)+2/d/b^2/(1+tan(1/2*d*x+1/2*c)^2)^2*a+2/d/b^3*arctan(tan(1/2*d
*x+1/2*c))*a^2+1/d/b*arctan(tan(1/2*d*x+1/2*c))-2/d*a^3/b^3/(a^2-b^2)^(1/2)
*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)/(a^2-b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [B] time = 3.01, size = 199, normalized size = 1.86

$$\frac{\operatorname{atan}\left(\frac{\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)}\right)}{b\,d}-\frac{\sin\left(2\,c+2\,d\,x\right)}{4\,b\,d}+\frac{2\,a^2\operatorname{atan}\left(\frac{\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)}\right)}{b^3\,d}+\frac{a\,\cos\left(c+d\,x\right)}{b^2\,d}+\frac{a^3\operatorname{atan}\left(\frac{\left(-\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)a^2+\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)a\,b+\dots}{\sqrt{b^2-a^2}\,\left(a\,\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)+2\,b\dots}\right.}{b^3\,d\,\sqrt{b^2-a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sin(c + d*x)^3/(a + b*sin(c + d*x)),x)
```

```
[Out] atan(sin(c/2 + (d*x)/2)/cos(c/2 + (d*x)/2))/(b*d) - sin(2*c + 2*d*x)/(4*b*d
) + (2*a^2*atan(sin(c/2 + (d*x)/2)/cos(c/2 + (d*x)/2)))/(b^3*d) + (a*cos(c
+ d*x))/(b^2*d) + (a^3*atan(((2*b^2*sin(c/2 + (d*x)/2) - a^2*sin(c/2 + (d*x
)/2) + a*b*cos(c/2 + (d*x)/2))*1i)/((b^2 - a^2)^(1/2)*(a*cos(c/2 + (d*x)/2)
 + 2*b*sin(c/2 + (d*x)/2))))*2i)/(b^3*d*(b^2 - a^2)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sin(d*x+c)**3/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.232 $\int \frac{(e+fx)^3 \csc(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=732

$$-\frac{6bf^3\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad^4\sqrt{a^2-b^2}}+\frac{6bf^3\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{ad^4\sqrt{a^2-b^2}}+\frac{6ibf^2(e+fx)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad^3\sqrt{a^2-b^2}}-\frac{6ibf^2(e+fx)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{ad^3\sqrt{a^2-b^2}}+\frac{3bf(e+}{}$$

```
[Out] -2*(f*x+e)^3*arctanh(exp(I*(d*x+c)))/a/d+3*I*f*(f*x+e)^2*polylog(2,-exp(I*(
d*x+c)))/a/d^2-3*I*f*(f*x+e)^2*polylog(2,exp(I*(d*x+c)))/a/d^2-6*f^2*(f*x+e
)*polylog(3,-exp(I*(d*x+c)))/a/d^3+6*f^2*(f*x+e)*polylog(3,exp(I*(d*x+c)))/
a/d^3-6*I*f^3*polylog(4,-exp(I*(d*x+c)))/a/d^4+6*I*f^3*polylog(4,exp(I*(d*x
+c)))/a/d^4+I*b*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/d/
(a^2-b^2)^(1/2)-I*b*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/
a/d/(a^2-b^2)^(1/2)+3*b*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^
2)^(1/2)))/a/d^2/(a^2-b^2)^(1/2)-3*b*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c
))/(a+(a^2-b^2)^(1/2)))/a/d^2/(a^2-b^2)^(1/2)+6*I*b*f^2*(f*x+e)*polylog(3,I
*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/d^3/(a^2-b^2)^(1/2)-6*I*b*f^2*(f*x
+e)*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/d^3/(a^2-b^2)^(1/2)
-6*b*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/d^4/(a^2-b^2)^
(1/2)+6*b*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/d^4/(a^2-
b^2)^(1/2)
```

Rubi [A] time = 1.12, antiderivative size = 732, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.346$, Rules used = {4535, 4183, 2531, 6609, 2282, 6589, 3323, 2264, 2190}

$$\frac{6ibf^2(e+fx)\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad^3\sqrt{a^2-b^2}}-\frac{6ibf^2(e+fx)\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{ad^3\sqrt{a^2-b^2}}+\frac{3bf(e+fx)^2\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad^2\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csc[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)^3*ArcTanh[E^(I*(c + d*x))])/(a*d) + (I*b*(e + f*x)^3*Log[1 -
(I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*Sqrt[a^2 - b^2]*d) - (I*b*
(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*Sqrt[a
^2 - b^2]*d) + ((3*I)*f*(e + f*x)^2*PolyLog[2, -E^(I*(c + d*x))])/(a*d^2) -
 ((3*I)*f*(e + f*x)^2*PolyLog[2, E^(I*(c + d*x))])/(a*d^2) + (3*b*f*(e + f*
x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*Sqrt[a^2 -
 b^2]*d^2) - (3*b*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[
a^2 - b^2])])/(a*Sqrt[a^2 - b^2]*d^2) - (6*f^2*(e + f*x)*PolyLog[3, -E^(I*(
c + d*x))])/(a*d^3) + (6*f^2*(e + f*x)*PolyLog[3, E^(I*(c + d*x))])/(a*d^3)
```

```
 + ((6*I)*b*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 -
b^2])])/(a*Sqrt[a^2 - b^2]*d^3) - ((6*I)*b*f^2*(e + f*x)*PolyLog[3, (I*b*E^
(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*Sqrt[a^2 - b^2]*d^3) - ((6*I)*f^3
*PolyLog[4, -E^(I*(c + d*x))])/(a*d^4) + ((6*I)*f^3*PolyLog[4, E^(I*(c + d*
x))])/(a*d^4) - (6*b*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b
^2])])/(a*Sqrt[a^2 - b^2]*d^4) + (6*b*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/
(a + Sqrt[a^2 - b^2])])/(a*Sqrt[a^2 - b^2]*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
```

```
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\csc(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\csc(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3}{a+b\sin(c+dx)}\,dx}{a}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(2b)\int \frac{e^{i(c+dx)}(e+fx)^3}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{a} - \frac{(3f)\int (e+fx)^2\log}{a}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{3if(e+fx)^2\mathrm{Li}_2\left(-e^{i(c+dx)}\right)}{ad^2} - \frac{3if(e+fx)^2\mathrm{Li}_2\left(e^{i(c}\right.}{ad^2}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)^3\log\left(\right.}{a\sqrt{a^2-}}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)^3\log\left(\right.}{a\sqrt{a^2-}}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)^3\log\left(\right.}{a\sqrt{a^2-}}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)^3\log\left(\right.}{a\sqrt{a^2-}}$$

$$= -\frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)^3\log\left(\right.}{a\sqrt{a^2-}}$$

Mathematica [A] time = 2.64, size = 894, normalized size = 1.22

$$-2d^3\tanh^{-1}(\cos(c+dx)+i\sin(c+dx))(e+fx)^3 + \frac{b\left(3d^2f\mathrm{Li}_2\left(-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}-a}\right)(e+fx)^2+i\left(2ie^3\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right)d^3+f^3x^3\log\left(\frac{ie^{i(c+}}{\sqrt{a^2-}}\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csc[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-2*d^3*(e + f*x)^3*ArcTanh[Cos[c + d*x] + I*Sin[c + d*x]] + (b*(3*d^2*f*(e
 + f*x)^2*PolyLog[2, ((-I)*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] + I*(
(2*I)*d^3*e^3*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + 3*d^3*e^2
*f*x*Log[1 + (I*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] + 3*d^3*e*f^2*x^
2*Log[1 + (I*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] + d^3*f^3*x^3*Log[1
```

```
 + (I*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] - 3*d^3*e^2*f*x*Log[1 - (I
*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])] - 3*d^3*e*f^2*x^2*Log[1 - (I*b*E
^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])] - d^3*f^3*x^3*Log[1 - (I*b*E^(I*(c +
 d*x)))/(a + Sqrt[a^2 - b^2])] + (3*I)*d^2*f*(e + f*x)^2*PolyLog[2, (I*b*E^
(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])] + 6*d*f^2*(e + f*x)*PolyLog[3, ((-I)*
b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] - 6*d*e*f^2*PolyLog[3, (I*b*E^(I
*(c + d*x)))/(a + Sqrt[a^2 - b^2])] - 6*d*f^3*x*PolyLog[3, (I*b*E^(I*(c + d
*x)))/(a + Sqrt[a^2 - b^2])] + (6*I)*f^3*PolyLog[4, ((-I)*b*E^(I*(c + d*x))
)/(-a + Sqrt[a^2 - b^2])] - (6*I)*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a +
 Sqrt[a^2 - b^2])]))))/Sqrt[a^2 - b^2] + (3*I)*f*(d^2*(e + f*x)^2*PolyLog[2,
 -Cos[c + d*x] - I*Sin[c + d*x]] + (2*I)*d*f*(e + f*x)*PolyLog[3, -Cos[c +
d*x] - I*Sin[c + d*x]] - 2*f^2*PolyLog[4, -Cos[c + d*x] - I*Sin[c + d*x]])
- (3*I)*f*(d^2*(e + f*x)^2*PolyLog[2, Cos[c + d*x] + I*Sin[c + d*x]] + (2*I
)*d*f*(e + f*x)*PolyLog[3, Cos[c + d*x] + I*Sin[c + d*x]] - 2*f^2*PolyLog[4
, Cos[c + d*x] + I*Sin[c + d*x]]))/(a*d^4)
```

fricas [C] time = 0.77, size = 3608, normalized size = 4.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(-12*I*b^2*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x +
c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
b^2)/b^2))/b) + 12*I*b^2*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*c
os(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2))/b) + 12*I*b^2*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2
*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*I*b^2*f^3*sqrt(-(a^2 - b^2)/b^2)*poly
log(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*
b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*I*(a^2 - b^2)*f^3*polylog(4
, cos(d*x + c) + I*sin(d*x + c)) + 12*I*(a^2 - b^2)*f^3*polylog(4, cos(d*x
+ c) - I*sin(d*x + c)) - 12*I*(a^2 - b^2)*f^3*polylog(4, -cos(d*x + c) + I*
sin(d*x + c)) + 12*I*(a^2 - b^2)*f^3*polylog(4, -cos(d*x + c) - I*sin(d*x +
 c)) + 2*(3*I*b^2*d^2*f^3*x^2 + 6*I*b^2*d^2*e*f^2*x + 3*I*b^2*d^2*e^2*f)*sq
rt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*
(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) +
2*(-3*I*b^2*d^2*f^3*x^2 - 6*I*b^2*d^2*e*f^2*x - 3*I*b^2*d^2*e^2*f)*sqrt(-(a
^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos
(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(-3*
I*b^2*d^2*f^3*x^2 - 6*I*b^2*d^2*e*f^2*x - 3*I*b^2*d^2*e^2*f)*sqrt(-(a^2 - b
^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x
+ c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(3*I*b^2*
d^2*f^3*x^2 + 6*I*b^2*d^2*e*f^2*x + 3*I*b^2*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^
```

```
2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) +
 I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(b^2*d^3*e^3 -
3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)
*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2
*I*a) + 2*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^
3)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*s
qrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2
*c^2*d*e*f^2 - b^2*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) +
2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(b^2*d^3*e^3 -
 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2
)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) -
 2*I*a) + 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*
b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*l
og(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin
(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^
3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b
^2*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*
x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b
)/b) + 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2
*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(
1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b^2*d^3*f^3*x^3 + 3*b^2*d^3*
e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2
*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x
 + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)
/b) - 12*(b^2*d*f^3*x + b^2*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*
(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(b^2*d*f^3*x + b^2*d*e*f^2)*sqrt(-(a^2
- b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*(b^2*d*f^3*x
 + b^2*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c)
- 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2
)/b^2))/b) + 12*(b^2*d*f^3*x + b^2*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(
3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*si
n(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + (6*I*(a^2 - b^2)*d^2*f^3*x^2 + 12*
I*(a^2 - b^2)*d^2*e*f^2*x + 6*I*(a^2 - b^2)*d^2*e^2*f)*dilog(cos(d*x + c) +
 I*sin(d*x + c)) + (-6*I*(a^2 - b^2)*d^2*f^3*x^2 - 12*I*(a^2 - b^2)*d^2*e*f
^2*x - 6*I*(a^2 - b^2)*d^2*e^2*f)*dilog(cos(d*x + c) - I*sin(d*x + c)) + (6
*I*(a^2 - b^2)*d^2*f^3*x^2 + 12*I*(a^2 - b^2)*d^2*e*f^2*x + 6*I*(a^2 - b^2)
*d^2*e^2*f)*dilog(-cos(d*x + c) + I*sin(d*x + c)) + (-6*I*(a^2 - b^2)*d^2*f
^3*x^2 - 12*I*(a^2 - b^2)*d^2*e*f^2*x - 6*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-c
os(d*x + c) - I*sin(d*x + c)) + 2*((a^2 - b^2)*d^3*f^3*x^3 + 3*(a^2 - b^2)*
d^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + (a^2 - b^2)*d^3*e^3)*log(cos(d*
x + c) + I*sin(d*x + c) + 1) + 2*((a^2 - b^2)*d^3*f^3*x^3 + 3*(a^2 - b^2)*d
^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + (a^2 - b^2)*d^3*e^3)*log(cos(d*x
```

```
 + c) - I*sin(d*x + c) + 1) - 2*((a^2 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2*
e^2*f + 3*(a^2 - b^2)*c^2*d*e*f^2 - (a^2 - b^2)*c^3*f^3)*log(-1/2*cos(d*x +
 c) + 1/2*I*sin(d*x + c) + 1/2) - 2*((a^2 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*
d^2*e^2*f + 3*(a^2 - b^2)*c^2*d*e*f^2 - (a^2 - b^2)*c^3*f^3)*log(-1/2*cos(d
*x + c) - 1/2*I*sin(d*x + c) + 1/2) - 2*((a^2 - b^2)*d^3*f^3*x^3 + 3*(a^2 -
 b^2)*d^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + 3*(a^2 - b^2)*c*d^2*e^2*f
 - 3*(a^2 - b^2)*c^2*d*e*f^2 + (a^2 - b^2)*c^3*f^3)*log(-cos(d*x + c) + I*s
in(d*x + c) + 1) - 2*((a^2 - b^2)*d^3*f^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*x^2
 + 3*(a^2 - b^2)*d^3*e^2*f*x + 3*(a^2 - b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)*c^
2*d*e*f^2 + (a^2 - b^2)*c^3*f^3)*log(-cos(d*x + c) - I*sin(d*x + c) + 1) -
12*((a^2 - b^2)*d*f^3*x + (a^2 - b^2)*d*e*f^2)*polylog(3, cos(d*x + c) + I*
sin(d*x + c)) - 12*((a^2 - b^2)*d*f^3*x + (a^2 - b^2)*d*e*f^2)*polylog(3, c
os(d*x + c) - I*sin(d*x + c)) + 12*((a^2 - b^2)*d*f^3*x + (a^2 - b^2)*d*e*f
^2)*polylog(3, -cos(d*x + c) + I*sin(d*x + c)) + 12*((a^2 - b^2)*d*f^3*x +
(a^2 - b^2)*d*e*f^2)*polylog(3, -cos(d*x + c) - I*sin(d*x + c)))/((a^3 - a*
b^2)*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 1.58, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \csc\left(dx+c\right)}{a+b\sin\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csc(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^3*csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sin(c + d*x)*(a + b*sin(c + d*x))),x)
[Out] \text{Hanged}
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^{3} \csc{\left(c + dx \right)}}{a + b \sin{\left(c + dx \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csc(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)**3*csc(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.233 $\int \frac{(e+fx)^2\csc(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=528

$$\frac{2ibf^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad^3\sqrt{a^2-b^2}}-\frac{2ibf^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{ad^3\sqrt{a^2-b^2}}+\frac{2bf(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad^2\sqrt{a^2-b^2}}-\frac{2bf(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{ad^2\sqrt{a^2-b^2}}+\frac{ib(e+fx)^2}{ac}$$

```
[Out] -2*(f*x+e)^2*arctanh(exp(I*(d*x+c)))/a/d+2*I*f*(f*x+e)*polylog(2,-exp(I*(d*
x+c)))/a/d^2-2*I*f*(f*x+e)*polylog(2,exp(I*(d*x+c)))/a/d^2-2*f^2*polylog(3,
-exp(I*(d*x+c)))/a/d^3+2*f^2*polylog(3,exp(I*(d*x+c)))/a/d^3+I*b*(f*x+e)^2*
ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/d/(a^2-b^2)^(1/2)-I*b*(f*x+e
)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/d/(a^2-b^2)^(1/2)+2*b*f*
(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/d^2/(a^2-b^2)^(
1/2)-2*b*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/d^2/
(a^2-b^2)^(1/2)+2*I*b*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))
/a/d^3/(a^2-b^2)^(1/2)-2*I*b*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^
(1/2)))/a/d^3/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.95, antiderivative size = 528, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4535, 4183, 2531, 2282, 6589, 3323, 2264, 2190}

$$\frac{2bf(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad^2\sqrt{a^2-b^2}}-\frac{2bf(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{ad^2\sqrt{a^2-b^2}}+\frac{2ibf^2\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad^3\sqrt{a^2-b^2}}-\frac{2ibf^2\text{Pol}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csc[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)^2*ArcTanh[E^(I*(c + d*x))])/(a*d) + (I*b*(e + f*x)^2*Log[1 -
(I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*Sqrt[a^2 - b^2]*d) - (I*b*
(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*Sqrt[a
^2 - b^2]*d) + ((2*I)*f*(e + f*x)*PolyLog[2, -E^(I*(c + d*x))])/(a*d^2) - (
(2*I)*f*(e + f*x)*PolyLog[2, E^(I*(c + d*x))])/(a*d^2) + (2*b*f*(e + f*x)*P
olyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*Sqrt[a^2 - b^2]*
d^2) - (2*b*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^
2])])/(a*Sqrt[a^2 - b^2]*d^2) - (2*f^2*PolyLog[3, -E^(I*(c + d*x))])/(a*d^3
) + (2*f^2*PolyLog[3, E^(I*(c + d*x))])/(a*d^3) + ((2*I)*b*f^2*PolyLog[3, (
I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*Sqrt[a^2 - b^2]*d^3) - ((2*
I)*b*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*Sqrt[a
^2 - b^2]*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\csc(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\csc(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2}{a+b\sin(c+dx)}\,dx}{a}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(2b)\int \frac{e^{i(c+dx)}(e+fx)^2}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{a} - \frac{(2f)\int (e+fx)\log\left(\right.}{ad}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{2if(e+fx)\text{Li}_2\left(-e^{i(c+dx)}\right)}{ad^2} - \frac{2if(e+fx)\text{Li}_2\left(e^{i(c+dx)}\right)}{ad^2}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)^2\log\left(1\right.}{a\sqrt{a^2-b}}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)^2\log\left(1\right.}{a\sqrt{a^2-b}}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)^2\log\left(1\right.}{a\sqrt{a^2-b}}$$

$$= -\frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)^2\log\left(1\right.}{a\sqrt{a^2-b}}$$

Mathematica [A] time = 1.58, size = 573, normalized size = 1.09

$$\frac{b\left(i\left(2id^2e^2\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right)+2d^2efx\log\left(1+\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}-a}\right)-2d^2efx\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)+d^2f^2x^2\log\left(1+\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}-a}\right)-d^2f^2x^2\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)+2idf(e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Csc[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (d^2*(e + f*x)^2*Log[1 - E^(I*(c + d*x))] - d^2*(e + f*x)^2*Log[1 + E^(I*(c
 + d*x))] + (2*I)*d*f*(e + f*x)*PolyLog[2, -E^(I*(c + d*x))] - (2*I)*d*f*(e
 + f*x)*PolyLog[2, E^(I*(c + d*x))] - 2*f^2*PolyLog[3, -E^(I*(c + d*x))] +
2*f^2*PolyLog[3, E^(I*(c + d*x))] + (b*(2*d*f*(e + f*x)*PolyLog[2, ((-I)*b*
E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] + I*((2*I)*d^2*e^2*ArcTan[(I*a + b
*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + 2*d^2*e*f*x*Log[1 + (I*b*E^(I*(c + d*x
)))/(-a + Sqrt[a^2 - b^2])] + d^2*f^2*x^2*Log[1 + (I*b*E^(I*(c + d*x)))/(-a
 + Sqrt[a^2 - b^2])] - 2*d^2*e*f*x*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[
a^2 - b^2])] - d^2*f^2*x^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^
2])] + (2*I)*d*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 -
 b^2])] + 2*f^2*PolyLog[3, ((-I)*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])]
 - 2*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])))/Sqrt[a^
2 - b^2])/(a*d^3)
```

fricas [C] time = 0.68, size = 2432, normalized size = 4.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(4*b^2*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) -
2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/
b^2))/b) - 4*b^2*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x +
 c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
 b^2)/b^2))/b) + 4*b^2*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*co
s(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2))/b) - 4*b^2*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2
*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2))/b) + 4*(a^2 - b^2)*f^2*polylog(3, cos(d*x + c) +
I*sin(d*x + c)) + 4*(a^2 - b^2)*f^2*polylog(3, cos(d*x + c) - I*sin(d*x + c
)) - 4*(a^2 - b^2)*f^2*polylog(3, -cos(d*x + c) + I*sin(d*x + c)) - 4*(a^2
- b^2)*f^2*polylog(3, -cos(d*x + c) - I*sin(d*x + c)) - 2*(2*I*b^2*d*f^2*x
+ 2*I*b^2*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*
a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
```

```
2) + 2*b)/b + 1) - 2*(-2*I*b^2*d*f^2*x - 2*I*b^2*d*e*f)*sqrt(-(a^2 - b^2)/b
^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) -
 I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(-2*I*b^2*d*f^2
*x - 2*I*b^2*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c)
+ 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2
)/b^2) + 2*b)/b + 1) - 2*(2*I*b^2*d*f^2*x + 2*I*b^2*d*e*f)*sqrt(-(a^2 - b^2
)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x +
c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(b^2*d^2*e^
2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c
) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(b^2*d^2*e
^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x +
c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(b^2*d^2*
e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x
+ c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*(b^2*d^
2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*
x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(b^2*
d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*sqrt(-(a^2 - b
^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c)
 - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b^2*d^2*f^2*x^2
+ 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log
(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*
e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a
*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sq
rt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b
^2*c*d*e*f - b^2*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x +
c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
b^2)/b^2) + 2*b)/b) - (4*I*(a^2 - b^2)*d*f^2*x + 4*I*(a^2 - b^2)*d*e*f)*dil
og(cos(d*x + c) + I*sin(d*x + c)) - (-4*I*(a^2 - b^2)*d*f^2*x - 4*I*(a^2 -
b^2)*d*e*f)*dilog(cos(d*x + c) - I*sin(d*x + c)) - (4*I*(a^2 - b^2)*d*f^2*x
 + 4*I*(a^2 - b^2)*d*e*f)*dilog(-cos(d*x + c) + I*sin(d*x + c)) - (-4*I*(a^
2 - b^2)*d*f^2*x - 4*I*(a^2 - b^2)*d*e*f)*dilog(-cos(d*x + c) - I*sin(d*x +
 c)) - 2*((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2)*d^2*e*f*x + (a^2 - b^2)*d
^2*e^2)*log(cos(d*x + c) + I*sin(d*x + c) + 1) - 2*((a^2 - b^2)*d^2*f^2*x^2
 + 2*(a^2 - b^2)*d^2*e*f*x + (a^2 - b^2)*d^2*e^2)*log(cos(d*x + c) - I*sin(
d*x + c) + 1) + 2*((a^2 - b^2)*d^2*e^2 - 2*(a^2 - b^2)*c*d*e*f + (a^2 - b^2
)*c^2*f^2)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) + 2*((a^2 - b^
2)*d^2*e^2 - 2*(a^2 - b^2)*c*d*e*f + (a^2 - b^2)*c^2*f^2)*log(-1/2*cos(d*x
+ c) - 1/2*I*sin(d*x + c) + 1/2) + 2*((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^
2)*d^2*e*f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(-cos(d*x +
c) + I*sin(d*x + c) + 1) + 2*((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2)*d^2*e
*f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(-cos(d*x + c) - I*s
in(d*x + c) + 1))/((a^3 - a*b^2)*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 0.99, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \csc \left(dx+c\right)}{a+b \sin \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sin(c + d*x)*(a + b*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{2} \csc \left(c+dx\right)}{a+b \sin \left(c+dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*csc(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.234 $\int \frac{(e+fx)\csc(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=325

$$\frac{bf\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad^2\sqrt{a^2-b^2}}-\frac{bf\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{ad^2\sqrt{a^2-b^2}}+\frac{ib(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad\sqrt{a^2-b^2}}-\frac{ib(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{ad\sqrt{a^2-b^2}}+\frac{if\text{Li}_2\left(-e^{i(}\right.}{ad^2}$$

```
[Out] -2*(f*x+e)*arctanh(exp(I*(d*x+c)))/a/d+I*f*polylog(2,-exp(I*(d*x+c)))/a/d^2
-I*f*polylog(2,exp(I*(d*x+c)))/a/d^2+I*b*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a
-(a^2-b^2)^(1/2)))/a/d/(a^2-b^2)^(1/2)-I*b*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/
(a+(a^2-b^2)^(1/2)))/a/d/(a^2-b^2)^(1/2)+b*f*polylog(2,I*b*exp(I*(d*x+c))/(
a-(a^2-b^2)^(1/2)))/a/d^2/(a^2-b^2)^(1/2)-b*f*polylog(2,I*b*exp(I*(d*x+c))/
(a+(a^2-b^2)^(1/2)))/a/d^2/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.62, antiderivative size = 325, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {4535, 4183, 2279, 2391, 3323, 2264, 2190}

$$\frac{bf\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ad^2\sqrt{a^2-b^2}}-\frac{bf\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{ad^2\sqrt{a^2-b^2}}+\frac{if\text{PolyLog}\left(2,-e^{i(c+dx)}\right)}{ad^2}-\frac{if\text{PolyLog}\left(2,e^{i(c+dx)}\right)}{ad^2}+\frac{ib(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csc[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-2*(e + f*x)*ArcTanh[E^(I*(c + d*x))])/(a*d) + (I*b*(e + f*x)*Log[1 - (I*b
*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*Sqrt[a^2 - b^2]*d) - (I*b*(e +
 f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*Sqrt[a^2 - b
^2]*d) + (I*f*PolyLog[2, -E^(I*(c + d*x))])/(a*d^2) - (I*f*PolyLog[2, E^(I*
(c + d*x))])/(a*d^2) + (b*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2
- b^2])])/(a*Sqrt[a^2 - b^2]*d^2) - (b*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(
a + Sqrt[a^2 - b^2])])/(a*Sqrt[a^2 - b^2]*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rubi steps

$$\int \frac{(e+fx)\csc(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\csc(c+dx)\,dx}{a} - \frac{b\int \frac{e+fx}{a+b\sin(c+dx)}\,dx}{a}$$

$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{(2b)\int \frac{e^{i(c+dx)}(e+fx)}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{a} - \frac{f\int \log\left(1-e^{i(c+dx)}\right)}{ad}$$

$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{\left(2ib^2\right)\int \frac{e^{i(c+dx)}(e+fx)}{2a-2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{a\sqrt{a^2-b^2}} - \frac{\left(2ib^2\right)\int \frac{e^{i(c+dx)}}{2a+2\sqrt{a^2-b^2}}}{a\sqrt{a^2-}}$$

$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)\log\left(1-\right.}{a\sqrt{a^2-b^2}}$$

$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)\log\left(1-\right.}{a\sqrt{a^2-b^2}}$$

$$= -\frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{ib(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d} - \frac{ib(e+fx)\log\left(1-\right.}{a\sqrt{a^2-b^2}}$$

Mathematica [B] time = 6.37, size = 764, normalized size = 2.35

$$-\frac{bd(e+fx)\left(\frac{2(de-cf)\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}} - \frac{if\left(\text{Li}_2\left(\frac{a\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)}{a+i\left(b+\sqrt{b^2-a^2}\right)}\right)+\log\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)\log\left(\frac{\sqrt{b^2-a^2}+a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{b^2-a^2}-ia+b}\right)\right)}{\sqrt{b^2-a^2}} + \frac{if\left(\text{Li}_2\left(\frac{a\left(i\tan\left(\frac{1}{2}(c+dx)\right)+1\right)}{a-i\left(b+\sqrt{b^2-a^2}\right)}\right.}{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Csc[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (d*e*Log[Tan[(c + d*x)/2]] - c*f*Log[Tan[(c + d*x)/2]] + f*((c + d*x)*(Log[
1 - E^(I*(c + d*x))] - Log[1 + E^(I*(c + d*x))]) + I*(PolyLog[2, -E^(I*(c +
 d*x))] - PolyLog[2, E^(I*(c + d*x))])) - (b*d*(e + f*x)*((2*(d*e - c*f)*Ar
cTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] - (I*f*(Log
[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((
-I)*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 - I*Tan[(c + d*x)/2]))/(a
 + I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1 + I*Tan[(c +
 d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-
```

```
a^2 + b^2])] + PolyLog[2, (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^
2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(-b
+ Sqrt[-a^2 + b^2] - a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2])] + Po
lyLog[2, (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])]))/Sqrt[-a
^2 + b^2] - (I*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b - Sqrt[-a^2 + b^2] + a
*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])] + PolyLog[2, (a + I*a*Tan[
(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2]))/(d*e -
c*f + I*f*Log[1 - I*Tan[(c + d*x)/2]] - I*f*Log[1 + I*Tan[(c + d*x)/2]]))/(
a*d^2)
```

fricas [B] time = 0.77, size = 1444, normalized size = 4.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(2*I*b^2*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a
*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
) + 2*b)/b + 1) - 2*I*b^2*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*
x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^
2 - b^2)/b^2) + 2*b)/b + 1) - 2*I*b^2*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(
-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*b^2*f*sqrt(-(a^2 - b^2)/b^2)
*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I
*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*(a^2 - b^2)*f*d
ilog(cos(d*x + c) + I*sin(d*x + c)) - 2*I*(a^2 - b^2)*f*dilog(cos(d*x + c)
- I*sin(d*x + c)) + 2*I*(a^2 - b^2)*f*dilog(-cos(d*x + c) + I*sin(d*x + c))
 - 2*I*(a^2 - b^2)*f*dilog(-cos(d*x + c) - I*sin(d*x + c)) + 2*(b^2*d*e - b
^2*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) +
2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*(b^2*d*e - b^2*c*f)*sqrt(-(a^2 - b^
2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b
^2) - 2*I*a) - 2*(b^2*d*e - b^2*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*
x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(b^2*
d*e - b^2*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x
 + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(b^2*d*f*x + b^2*c*f)*sqrt(
-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos
(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b^2*d*f
*x + b^2*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(
d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2
*b)/b) + 2*(b^2*d*f*x + b^2*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos
(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-
(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b^2*d*f*x + b^2*c*f)*sqrt(-(a^2 - b^2)/b^2)
*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*
sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*((a^2 - b^2)*d*f*x + (a^
```

```
2 - b^2)*d*e)*log(cos(d*x + c) + I*sin(d*x + c) + 1) + 2*((a^2 - b^2)*d*f*x
 + (a^2 - b^2)*d*e)*log(cos(d*x + c) - I*sin(d*x + c) + 1) - 2*((a^2 - b^2)
*d*e - (a^2 - b^2)*c*f)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) -
 2*((a^2 - b^2)*d*e - (a^2 - b^2)*c*f)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*
x + c) + 1/2) - 2*((a^2 - b^2)*d*f*x + (a^2 - b^2)*c*f)*log(-cos(d*x + c) +
 I*sin(d*x + c) + 1) - 2*((a^2 - b^2)*d*f*x + (a^2 - b^2)*c*f)*log(-cos(d*x
 + c) - I*sin(d*x + c) + 1))/((a^3 - a*b^2)*d^2)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.25, size = 660, normalized size = 2.03

$$-\frac{2ieb\arctan\left(\frac{2ib\,e^{i(dx+c)}-2a}{2\sqrt{-a^2+b^2}}\right)}{da\sqrt{-a^2+b^2}}-\frac{e\ln\left(e^{i(dx+c)}+1\right)}{ad}-\frac{fc\ln\left(e^{i(dx+c)}-1\right)}{a\,d^2}+\frac{e\ln\left(e^{i(dx+c)}-1\right)}{ad}-\frac{fb\ln\left(\frac{ia+b\,e^{i(dx+c)}-\sqrt{-a^2+b^2}}{ia-\sqrt{-a^2+b^2}}\right)}{da\sqrt{-a^2+b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] -2*I/d*e/a*b/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b
^2)^(1/2))-1/a/d*e*ln(exp(I*(d*x+c))+1)-1/a/d^2*f*c*ln(exp(I*(d*x+c))-1)+1/
a/d*e*ln(exp(I*(d*x+c))-1)-1/d*f*b/a/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+
c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x-1/d^2*f*b/a/(-a^2+b^2)^(1/2
)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c+1/d*
f*b/a/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^
2+b^2)^(1/2)))*x+1/d^2*f*b/a/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^
2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c+I/d^2*f*b/a/(-a^2+b^2)^(1/2)*dilog(
(I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))-I/d^2*f*b/a
/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+
b^2)^(1/2)))-1/a/d*ln(exp(I*(d*x+c))+1)*f*x+I/d^2*f/a*dilog(exp(I*(d*x+c))+
1)+I/d^2*f*dilog(exp(I*(d*x+c)))/a+2*I/d^2*f*c/a*b/(-a^2+b^2)^(1/2)*arctan(
1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sin(c + d*x)*(a + b*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)\csc\left(c + dx\right)}{a + b\sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*csc(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.235 $\int \frac{\csc(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=67

$$-\frac{2b\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{ad\sqrt{a^2-b^2}}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}$$

```
[Out] -arctanh(cos(d*x+c))/a/d-2*b*arctan((b+a*tan(1/2*d*x+1/2*c))/(a^2-b^2)^(1/2
))/a/d/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {2747, 3770, 2660, 618, 204}

$$-\frac{2b\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{ad\sqrt{a^2-b^2}}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[c + d*x]/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-2*b*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/(a*Sqrt[a^2 - b^2]*
d) - ArcTanh[Cos[c + d*x]]/(a*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
```

```
a^2 - b^2, 0]
```

Rule 2747

```
Int[1/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (
f_.)*(x_)])), x_Symbol] :> Dist[b/(b*c - a*d), Int[1/(a + b*Sin[e + f*x]),
x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*Sin[e + f*x]), x], x] /; FreeQ[{a
, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\begin{aligned}
\int \frac{\csc(c+dx)}{a+b\sin(c+dx)}\,dx &= \frac{\int \csc(c+dx)\,dx}{a}-\frac{b\int \frac{1}{a+b\sin(c+dx)}\,dx}{a}\\
&=-\frac{\tanh^{-1}(\cos(c+dx))}{ad}-\frac{(2b)\,\text{Subst}\left(\int \frac{1}{a+2bx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(c+dx)\right)\right)}{ad}\\
&=-\frac{\tanh^{-1}(\cos(c+dx))}{ad}+\frac{(4b)\,\text{Subst}\left(\int \frac{1}{-4\left(a^2-b^2\right)-x^2}\,dx,x,2b+2a\tan\left(\frac{1}{2}(c+dx)\right)\right)}{ad}\\
&=-\frac{2b\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{a\sqrt{a^2-b^2}\,d}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 77, normalized size = 1.15

$$\frac{-\frac{2b\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}}+\log\left(\sin\left(\frac{1}{2}(c+dx)\right)\right)-\log\left(\cos\left(\frac{1}{2}(c+dx)\right)\right)}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[c + d*x]/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-2*b*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] -
Log[Cos[(c + d*x)/2]] + Log[Sin[(c + d*x)/2]])/(a*d)
```

fricas [A] time = 0.61, size = 297, normalized size = 4.43

$$\left[-\frac{\sqrt{-a^2+b^2}\,b\log\left(-\frac{(2a^2-b^2)\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2-2(a\cos(dx+c)\sin(dx+c)+b\cos(dx+c))\sqrt{-a^2+b^2}}{b^2\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2}\right)+(a^2-b^2)\log\left(\right.}{2(a^3-ab^2)d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] [-1/2*(sqrt(-a^2 + b^2)*b*log(-((2*a^2 - b^2)*cos(d*x + c)^2 - 2*a*b*sin(d*
x + c) - a^2 - b^2 - 2*(a*cos(d*x + c)*sin(d*x + c) + b*cos(d*x + c))*sqrt(
-a^2 + b^2))/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2)) + (a^2
- b^2)*log(1/2*cos(d*x + c) + 1/2) - (a^2 - b^2)*log(-1/2*cos(d*x + c) + 1/
2))/((a^3 - a*b^2)*d), 1/2*(2*sqrt(a^2 - b^2)*b*arctan(-(a*sin(d*x + c) + b
)/(sqrt(a^2 - b^2)*cos(d*x + c))) - (a^2 - b^2)*log(1/2*cos(d*x + c) + 1/2)
 + (a^2 - b^2)*log(-1/2*cos(d*x + c) + 1/2))/((a^3 - a*b^2)*d)]
```

giac [A] time = 0.70, size = 83, normalized size = 1.24

$$-\frac{\frac{2\left(\pi\left\lfloor\frac{dx+c}{2\pi}+\frac{1}{2}\right\rfloor\operatorname{sgn}(a)+\arctan\left(\frac{a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+b}{\sqrt{a^2-b^2}}\right)\right)b}{\sqrt{a^2-b^2}\,a}-\frac{\log\left(\left|\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)\right|\right)}{a}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -(2*(pi*floor(1/2*(d*x + c)/pi + 1/2)*sgn(a) + arctan((a*tan(1/2*d*x + 1/2*
c) + b)/sqrt(a^2 - b^2)))*b/(sqrt(a^2 - b^2)*a) - log(abs(tan(1/2*d*x + 1/2
*c)))/a)/d
```

maple [A] time = 0.00, size = 69, normalized size = 1.03

$$\frac{\ln\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{ad}-\frac{2b\arctan\left(\frac{2a\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+2b}{2\sqrt{a^2-b^2}}\right)}{da\sqrt{a^2-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] 1/a/d*ln(tan(1/2*d*x+1/2*c))-2/d*b/a/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/
2*d*x+1/2*c)+2*b)/(a^2-b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [B] time = 2.68, size = 173, normalized size = 2.58

$$\frac{\ln\left(\frac{\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)}\right)}{a\,d}+\frac{2\,b\,\mathrm{atanh}\left(\frac{\sqrt{b^2-a^2}\,\left(-1\mathrm{i}\,\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a^2+2\mathrm{i}\,\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a\,b+4\mathrm{i}\,\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,b^2\right)}{1\mathrm{i}\,\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a^3+3\mathrm{i}\,\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a^2\,b-2\mathrm{i}\,\cos\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,a\,b^2-4\mathrm{i}\,\sin\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,b^3}\right)}{a\,d\,\sqrt{b^2-a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(c + d*x)*(a + b*sin(c + d*x))),x)
```

```
[Out] log(sin(c/2 + (d*x)/2)/cos(c/2 + (d*x)/2))/(a*d) + (2*b*atanh(((b^2 - a^2)^
(1/2)*(b^2*sin(c/2 + (d*x)/2)*4i - a^2*sin(c/2 + (d*x)/2)*1i + a*b*cos(c/2
+ (d*x)/2)*2i))/(a^3*cos(c/2 + (d*x)/2)*1i - b^3*sin(c/2 + (d*x)/2)*4i - a*
b^2*cos(c/2 + (d*x)/2)*2i + a^2*b*sin(c/2 + (d*x)/2)*3i)))/(a*d*(b^2 - a^2)
^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\csc(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.236 $\int \frac{(e+fx)^3 \csc^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=882

$$\frac{3\mathrm{Li}_3\left(e^{2i(c+dx)}\right)f^3}{2ad^4}+\frac{6ib\mathrm{Li}_4\left(-e^{i(c+dx)}\right)f^3}{a^2d^4}-\frac{6ib\mathrm{Li}_4\left(e^{i(c+dx)}\right)f^3}{a^2d^4}+\frac{6b^2\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)f^3}{a^2\sqrt{a^2-b^2}\,d^4}-\frac{6b^2\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)f^3}{a^2\sqrt{a^2-b^2}\,d^4}-\frac{3i(e}{}$$

```
[Out] -3*I*f^2*(f*x+e)*polylog(2,exp(2*I*(d*x+c)))/a/d^3+2*b*(f*x+e)^3*arctanh(ex
p(I*(d*x+c)))/a^2/d-(f*x+e)^3*cot(d*x+c)/a/d+3*f*(f*x+e)^2*ln(1-exp(2*I*(d*
x+c)))/a/d^2+6*I*b*f^3*polylog(4,-exp(I*(d*x+c)))/a^2/d^4+6*I*b^2*f^2*(f*x+
e)*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/d^3/(a^2-b^2)^(1/2
)-I*(f*x+e)^3/a/d+6*b*f^2*(f*x+e)*polylog(3,-exp(I*(d*x+c)))/a^2/d^3-6*b*f^
2*(f*x+e)*polylog(3,exp(I*(d*x+c)))/a^2/d^3+3/2*f^3*polylog(3,exp(2*I*(d*x+
c)))/a/d^4-I*b^2*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2
/d/(a^2-b^2)^(1/2)+I*b^2*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/
2)))/a^2/d/(a^2-b^2)^(1/2)-3*I*b*f*(f*x+e)^2*polylog(2,-exp(I*(d*x+c)))/a^2
/d^2+3*I*b*f*(f*x+e)^2*polylog(2,exp(I*(d*x+c)))/a^2/d^2-3*b^2*f*(f*x+e)^2*
polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/d^2/(a^2-b^2)^(1/2)+3
*b^2*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/d^2/
(a^2-b^2)^(1/2)-6*I*b^2*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^
2)^(1/2)))/a^2/d^3/(a^2-b^2)^(1/2)-6*I*b*f^3*polylog(4,exp(I*(d*x+c)))/a^2/
d^4+6*b^2*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/d^4/(a^
2-b^2)^(1/2)-6*b^2*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^
2/d^4/(a^2-b^2)^(1/2)
```

Rubi [A] time = 1.55, antiderivative size = 882, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 11, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.393$, Rules used = {4535, 4184, 3717, 2190, 2531, 2282, 6589, 4183, 6609, 3323, 2264}

$$\frac{3\text{PolyLog}\left(3,e^{2i(c+dx)}\right)f^3}{2ad^4}+\frac{6ib\text{PolyLog}\left(4,-e^{i(c+dx)}\right)f^3}{a^2d^4}-\frac{6ib\text{PolyLog}\left(4,e^{i(c+dx)}\right)f^3}{a^2d^4}+\frac{6b^2\text{PolyLog}\left(4,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right.}{a^2\sqrt{a^2-b^2}\,d^4}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Csc[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I)*(e + f*x)^3)/(a*d) + (2*b*(e + f*x)^3*ArcTanh[E^(I*(c + d*x))])/(a^2*
d) - ((e + f*x)^3*Cot[c + d*x])/(a*d) - (I*b^2*(e + f*x)^3*Log[1 - (I*b*E^(
I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d) + (I*b^2*(e +
 f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2
 - b^2]*d) + (3*f*(e + f*x)^2*Log[1 - E^((2*I)*(c + d*x))])/(a*d^2) - ((3*I
```

```
)*b*f*(e + f*x)^2*PolyLog[2, -E^(I*(c + d*x))])/(a^2*d^2) + ((3*I)*b*f*(e +
 f*x)^2*PolyLog[2, E^(I*(c + d*x))])/(a^2*d^2) - (3*b^2*f*(e + f*x)^2*PolyL
og[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d^
2) + (3*b^2*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 -
b^2])])/(a^2*Sqrt[a^2 - b^2]*d^2) - ((3*I)*f^2*(e + f*x)*PolyLog[2, E^((2*I
)*(c + d*x))])/(a*d^3) + (6*b*f^2*(e + f*x)*PolyLog[3, -E^(I*(c + d*x))])/(
a^2*d^3) - (6*b*f^2*(e + f*x)*PolyLog[3, E^(I*(c + d*x))])/(a^2*d^3) - ((6*
I)*b^2*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])
])/(a^2*Sqrt[a^2 - b^2]*d^3) + ((6*I)*b^2*f^2*(e + f*x)*PolyLog[3, (I*b*E^(
I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d^3) + (3*f^3*Po
lyLog[3, E^((2*I)*(c + d*x))])/(2*a*d^4) + ((6*I)*b*f^3*PolyLog[4, -E^(I*(c
 + d*x))])/(a^2*d^4) - ((6*I)*b*f^3*PolyLog[4, E^(I*(c + d*x))])/(a^2*d^4)
+ (6*b^2*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*
Sqrt[a^2 - b^2]*d^4) - (6*b^2*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqr
t[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\csc^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\csc^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\csc(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^3\cot(c+dx)}{ad} - \frac{b\int (e+fx)^3\csc(c+dx)\,dx}{a^2} + \frac{b^2\int \frac{(e+fx)^3}{a+b\sin(c+dx)}\,dx}{a^2} + \frac{(3f\cdots}{\cdots}$$

$$= -\frac{i(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^3\cot(c+dx)}{ad} + \frac{\left(2b^2\right)\int \frac{\cdots}{ib+2\cdots}}{\cdots}$$

$$= -\frac{i(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^3\cot(c+dx)}{ad} + \frac{3f(e+fx)^2\cdots}{\cdots}$$

$$= -\frac{i(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^3\cot(c+dx)}{ad} - \frac{ib^2(e+fx)^3\cdots}{a^2\cdots}$$

$$= -\frac{i(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^3\cot(c+dx)}{ad} - \frac{ib^2(e+fx)^3\cdots}{a^2\cdots}$$

$$= -\frac{i(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^3\cot(c+dx)}{ad} - \frac{ib^2(e+fx)^3\cdots}{a^2\cdots}$$

$$= -\frac{i(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^3\cot(c+dx)}{ad} - \frac{ib^2(e+fx)^3\cdots}{a^2\cdots}$$

$$= -\frac{i(e+fx)^3}{ad} + \frac{2b(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^3\cot(c+dx)}{ad} - \frac{ib^2(e+fx)^3\cdots}{a^2\cdots}$$

Mathematica [A] time = 48.21, size = 1680, normalized size = 1.90

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Csc[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (((-2*I)*a*d^3*(e + f*x)^3)/(-1 + E^((2*I)*c)) - 3*d^2*e*f*(b*d*e - 2*a*f)*
x*Log[1 - E^((-I)*(c + d*x))] - 3*d^2*f^2*(b*d*e - a*f)*x^2*Log[1 - E^((-I)
*(c + d*x))] - b*d^3*f^3*x^3*Log[1 - E^((-I)*(c + d*x))] + 3*d^2*e*f*(b*d*e
 + 2*a*f)*x*Log[1 + E^((-I)*(c + d*x))] + 3*d^2*f^2*(b*d*e + a*f)*x^2*Log[1
 + E^((-I)*(c + d*x))] + b*d^3*f^3*x^3*Log[1 + E^((-I)*(c + d*x))] + I*d^2*
e^2*(b*d*e - 3*a*f)*(d*x + I*Log[1 - E^(I*(c + d*x))]) + d^2*e^2*(b*d*e + 3
*a*f)*((-I)*d*x + Log[1 + E^(I*(c + d*x))]) + (3*I)*d*e*f*(b*d*e + 2*a*f)*P
olyLog[2, -E^((-I)*(c + d*x))] - (3*I)*d*e*f*(b*d*e - 2*a*f)*PolyLog[2, E^(
(-I)*(c + d*x))] + 6*f^2*(b*d*e + a*f)*(I*d*x*PolyLog[2, -E^((-I)*(c + d*x)
)] + PolyLog[3, -E^((-I)*(c + d*x))]) + 6*f^2*(-(b*d*e) + a*f)*(I*d*x*PolyL
og[2, E^((-I)*(c + d*x))] + PolyLog[3, E^((-I)*(c + d*x))]) + 3*b*f^3*(I*d^
2*x^2*PolyLog[2, -E^((-I)*(c + d*x))] + 2*d*x*PolyLog[3, -E^((-I)*(c + d*x)
)] - (2*I)*PolyLog[4, -E^((-I)*(c + d*x))]) - (3*I)*b*f^3*(d^2*x^2*PolyLog[
2, E^((-I)*(c + d*x))] - (2*I)*d*x*PolyLog[3, E^((-I)*(c + d*x))] - 2*PolyL
og[4, E^((-I)*(c + d*x))]))/(a^2*d^4) + (b^2*(2*Sqrt[-a^2 + b^2]*d^3*e^3*Ar
cTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + 3*Sqrt[a^2 - b^2]*d^3*e^2
*f*x*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 3*Sqrt[a^2
- b^2]*d^3*e*f^2*x^2*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2]
)] + Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt
[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d^3*e^2*f*x*Log[1 + (b*E^(I*(c + d*x)))/
(I*a + Sqrt[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*Log[1 + (b*E^(I
*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log[1
+ (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - (3*I)*Sqrt[a^2 - b^2]*d^2
*f*(e + f*x)^2*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])]
+ (3*I)*Sqrt[a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(I*(c + d*x)))/
(I*a + Sqrt[-a^2 + b^2]))] + 6*Sqrt[a^2 - b^2]*d*e*f^2*PolyLog[3, (b*E^(I*(
c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 6*Sqrt[a^2 - b^2]*d*f^3*x*PolyLog
[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 6*Sqrt[a^2 - b^2]*d*
e*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] - 6*Sqrt[
a^2 - b^2]*d*f^3*x*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]
))] + (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, (b*E^(I*(c + d*x)))/((-I)*a + Sq
rt[-a^2 + b^2])] - (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, -((b*E^(I*(c + d*x)
))/(I*a + Sqrt[-a^2 + b^2]))]))/(a^2*Sqrt[-(a^2 - b^2)^2]*d^4) + (Csc[c/2]*
Csc[c/2 + (d*x)/2]*(e^3*Sin[(d*x)/2] + 3*e^2*f*x*Sin[(d*x)/2] + 3*e*f^2*x^2
*Sin[(d*x)/2] + f^3*x^3*Sin[(d*x)/2]))/(2*a*d) + (Sec[c/2]*Sec[c/2 + (d*x)/
2]*(e^3*Sin[(d*x)/2] + 3*e^2*f*x*Sin[(d*x)/2] + 3*e*f^2*x^2*Sin[(d*x)/2] +
f^3*x^3*Sin[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 1.01, size = 4584, normalized size = 5.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(12*I*b^3*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x + c
) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b
^2)/b^2))/b)*sin(d*x + c) - 12*I*b^3*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4,
1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*
x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - 12*I*b^3*f^3*sqrt(-(a^2 -
 b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*co
s(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 12
*I*b^3*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a
*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
))/b)*sin(d*x + c) + 12*I*(a^2*b - b^3)*f^3*polylog(4, cos(d*x + c) + I*sin
(d*x + c))*sin(d*x + c) - 12*I*(a^2*b - b^3)*f^3*polylog(4, cos(d*x + c) -
I*sin(d*x + c))*sin(d*x + c) + 12*I*(a^2*b - b^3)*f^3*polylog(4, -cos(d*x +
 c) + I*sin(d*x + c))*sin(d*x + c) - 12*I*(a^2*b - b^3)*f^3*polylog(4, -cos
(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + 2*(-3*I*b^3*d^2*f^3*x^2 - 6*I*b^
3*d^2*e*f^2*x - 3*I*b^3*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a
*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sq
rt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*(3*I*b^3*d^2*f^3*x^2 +
6*I*b^3*d^2*e*f^2*x + 3*I*b^3*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*
(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*(3*I*b^3*d^2*f^3*
x^2 + 6*I*b^3*d^2*e*f^2*x + 3*I*b^3*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog
(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin
(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*(-3*I*b^3*
d^2*f^3*x^2 - 6*I*b^3*d^2*e*f^2*x - 3*I*b^3*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^
2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) +
 I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - 2*(b
^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*sqrt(-(a^
2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 -
b^2)/b^2) + 2*I*a)*sin(d*x + c) - 2*(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^
3*c^2*d*e*f^2 - b^3*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) -
2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) + 2*(
b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*sqrt(-(a
^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2
- b^2)/b^2) + 2*I*a)*sin(d*x + c) + 2*(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*
b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c)
 - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) -
2*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*
e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*
I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + 2*(b^3*d^3*f^3*x^3 + 3*b^3
*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2
```

+ b^3*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin
(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) +
2*b)/b)*sin(d*x + c) - 2*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3
*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*sqrt(-(a^2
- b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x
+ c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + 2*
(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^
2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I
*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*
sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + 12*(b^3*d*f^3*x + b^3*d*e*f
^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x
 + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*si
n(d*x + c) - 12*(b^3*d*f^3*x + b^3*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(
3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin
(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 12*(b^3*d*f^3*x + b^3*
d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*s
in(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))
/b)*sin(d*x + c) - 12*(b^3*d*f^3*x + b^3*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*po
lylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) -
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + (-6*I*(a^2*b -
b^3)*d^2*f^3*x^2 - 6*I*(a^2*b - b^3)*d^2*e^2*f + 12*I*(a^3 - a*b^2)*d*e*f^2
 - 12*I*((a^2*b - b^3)*d^2*e*f^2 - (a^3 - a*b^2)*d*f^3)*x)*dilog(cos(d*x +
c) + I*sin(d*x + c))*sin(d*x + c) + (6*I*(a^2*b - b^3)*d^2*f^3*x^2 + 6*I*(a
^2*b - b^3)*d^2*e^2*f - 12*I*(a^3 - a*b^2)*d*e*f^2 + 12*I*((a^2*b - b^3)*d^
2*e*f^2 - (a^3 - a*b^2)*d*f^3)*x)*dilog(cos(d*x + c) - I*sin(d*x + c))*sin(
d*x + c) + (-6*I*(a^2*b - b^3)*d^2*f^3*x^2 - 6*I*(a^2*b - b^3)*d^2*e^2*f -
12*I*(a^3 - a*b^2)*d*e*f^2 - 12*I*((a^2*b - b^3)*d^2*e*f^2 + (a^3 - a*b^2)*
d*f^3)*x)*dilog(-cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + (6*I*(a^2*b
- b^3)*d^2*f^3*x^2 + 6*I*(a^2*b - b^3)*d^2*e^2*f + 12*I*(a^3 - a*b^2)*d*e*f
^2 + 12*I*((a^2*b - b^3)*d^2*e*f^2 + (a^3 - a*b^2)*d*f^3)*x)*dilog(-cos(d*x
 + c) - I*sin(d*x + c))*sin(d*x + c) - 2*((a^2*b - b^3)*d^3*f^3*x^3 + (a^2*
b - b^3)*d^3*e^3 + 3*(a^3 - a*b^2)*d^2*e^2*f + 3*((a^2*b - b^3)*d^3*e*f^2 +
 (a^3 - a*b^2)*d^2*f^3)*x^2 + 3*((a^2*b - b^3)*d^3*e^2*f + 2*(a^3 - a*b^2)*
d^2*e*f^2)*x)*log(cos(d*x + c) + I*sin(d*x + c) + 1)*sin(d*x + c) - 2*((a^2
*b - b^3)*d^3*f^3*x^3 + (a^2*b - b^3)*d^3*e^3 + 3*(a^3 - a*b^2)*d^2*e^2*f +
 3*((a^2*b - b^3)*d^3*e*f^2 + (a^3 - a*b^2)*d^2*f^3)*x^2 + 3*((a^2*b - b^3)
*d^3*e^2*f + 2*(a^3 - a*b^2)*d^2*e*f^2)*x)*log(cos(d*x + c) - I*sin(d*x + c
) + 1)*sin(d*x + c) + 2*((a^2*b - b^3)*d^3*e^3 - 3*(a^3 - a*b^2 + (a^2*b -
b^3)*c)*d^2*e^2*f + 3*((a^2*b - b^3)*c^2 + 2*(a^3 - a*b^2)*c)*d*e*f^2 - ((a
^2*b - b^3)*c^3 + 3*(a^3 - a*b^2)*c^2)*f^3)*log(-1/2*cos(d*x + c) + 1/2*I*s
in(d*x + c) + 1/2)*sin(d*x + c) + 2*((a^2*b - b^3)*d^3*e^3 - 3*(a^3 - a*b^2
 + (a^2*b - b^3)*c)*d^2*e^2*f + 3*((a^2*b - b^3)*c^2 + 2*(a^3 - a*b^2)*c)*d
*e*f^2 - ((a^2*b - b^3)*c^3 + 3*(a^3 - a*b^2)*c^2)*f^3)*log(-1/2*cos(d*x +
c) - 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) + 2*((a^2*b - b^3)*d^3*f^3*x^3
+ 3*(a^2*b - b^3)*c*d^2*e^2*f - 3*((a^2*b - b^3)*c^2 + 2*(a^3 - a*b^2)*c)*d

```
*e*f^2 + ((a^2*b - b^3)*c^3 + 3*(a^3 - a*b^2)*c^2)*f^3 + 3*((a^2*b - b^3)*d
^3*e*f^2 - (a^3 - a*b^2)*d^2*f^3)*x^2 + 3*((a^2*b - b^3)*d^3*e^2*f - 2*(a^3
 - a*b^2)*d^2*e*f^2)*x)*log(-cos(d*x + c) + I*sin(d*x + c) + 1)*sin(d*x + c
) + 2*((a^2*b - b^3)*d^3*f^3*x^3 + 3*(a^2*b - b^3)*c*d^2*e^2*f - 3*((a^2*b
- b^3)*c^2 + 2*(a^3 - a*b^2)*c)*d*e*f^2 + ((a^2*b - b^3)*c^3 + 3*(a^3 - a*b
^2)*c^2)*f^3 + 3*((a^2*b - b^3)*d^3*e*f^2 - (a^3 - a*b^2)*d^2*f^3)*x^2 + 3*
((a^2*b - b^3)*d^3*e^2*f - 2*(a^3 - a*b^2)*d^2*e*f^2)*x)*log(-cos(d*x + c)
- I*sin(d*x + c) + 1)*sin(d*x + c) + 12*((a^2*b - b^3)*d*f^3*x + (a^2*b - b
^3)*d*e*f^2 - (a^3 - a*b^2)*f^3)*polylog(3, cos(d*x + c) + I*sin(d*x + c))*
sin(d*x + c) + 12*((a^2*b - b^3)*d*f^3*x + (a^2*b - b^3)*d*e*f^2 - (a^3 - a
*b^2)*f^3)*polylog(3, cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 12*((a^
2*b - b^3)*d*f^3*x + (a^2*b - b^3)*d*e*f^2 + (a^3 - a*b^2)*f^3)*polylog(3,
-cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) - 12*((a^2*b - b^3)*d*f^3*x +
(a^2*b - b^3)*d*e*f^2 + (a^3 - a*b^2)*f^3)*polylog(3, -cos(d*x + c) - I*sin
(d*x + c))*sin(d*x + c) + 4*((a^3 - a*b^2)*d^3*f^3*x^3 + 3*(a^3 - a*b^2)*d^
3*e*f^2*x^2 + 3*(a^3 - a*b^2)*d^3*e^2*f*x + (a^3 - a*b^2)*d^3*e^3)*cos(d*x
+ c))/((a^4 - a^2*b^2)*d^4*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [F] time = 4.66, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\csc^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*csc(d*x+c)^2/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^3*csc(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(sin(c + d*x)^2*(a + b*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^{3} \csc^{2}\left(c + dx\right)}{a + b\sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*csc(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*csc(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.237 $\int \frac{(e+fx)^2 \csc^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=639

$$-\frac{2ib^2f^2\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2d^3\sqrt{a^2-b^2}}+\frac{2ib^2f^2\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{a^2d^3\sqrt{a^2-b^2}}-\frac{2b^2f(e+fx)\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2d^2\sqrt{a^2-b^2}}+\frac{2b^2f(e+fx)\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{a^2d^2\sqrt{a^2-b^2}}-\frac{ib^2(e}{}$$

```
[Out] -I*(f*x+e)^2/a/d+2*b*(f*x+e)^2*arctanh(exp(I*(d*x+c)))/a^2/d-(f*x+e)^2*cot(
d*x+c)/a/d+2*f*(f*x+e)*ln(1-exp(2*I*(d*x+c)))/a/d^2-2*I*b*f*(f*x+e)*polylog
(2,-exp(I*(d*x+c)))/a^2/d^2+2*I*b*f*(f*x+e)*polylog(2,exp(I*(d*x+c)))/a^2/d
^2-I*f^2*polylog(2,exp(2*I*(d*x+c)))/a/d^3+2*b*f^2*polylog(3,-exp(I*(d*x+c)
))/a^2/d^3-2*b*f^2*polylog(3,exp(I*(d*x+c)))/a^2/d^3-I*b^2*(f*x+e)^2*ln(1-I
*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/d/(a^2-b^2)^(1/2)+I*b^2*(f*x+e)^
2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/d/(a^2-b^2)^(1/2)-2*b^2*
f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/d^2/(a^2-b^
2)^(1/2)+2*b^2*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/
a^2/d^2/(a^2-b^2)^(1/2)-2*I*b^2*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^
2)^(1/2)))/a^2/d^3/(a^2-b^2)^(1/2)+2*I*b^2*f^2*polylog(3,I*b*exp(I*(d*x+c))
/(a+(a^2-b^2)^(1/2)))/a^2/d^3/(a^2-b^2)^(1/2)
```

Rubi [A] time = 1.21, antiderivative size = 639, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 12, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.429$, Rules used = {4535, 4184, 3717, 2190, 2279, 2391, 4183, 2531, 2282, 6589, 3323, 2264}

$$-\frac{2b^2f(e+fx)\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2d^2\sqrt{a^2-b^2}}+\frac{2b^2f(e+fx)\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{a^2d^2\sqrt{a^2-b^2}}-\frac{2ib^2f^2\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2d^3\sqrt{a^2-b^2}}+\frac{2ib^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Csc[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I)*(e + f*x)^2)/(a*d) + (2*b*(e + f*x)^2*ArcTanh[E^(I*(c + d*x))])/(a^2*
d) - ((e + f*x)^2*Cot[c + d*x])/(a*d) - (I*b^2*(e + f*x)^2*Log[1 - (I*b*E^(
I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d) + (I*b^2*(e +
 f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2
 - b^2]*d) + (2*f*(e + f*x)*Log[1 - E^((2*I)*(c + d*x))])/(a*d^2) - ((2*I)*
b*f*(e + f*x)*PolyLog[2, -E^(I*(c + d*x))])/(a^2*d^2) + ((2*I)*b*f*(e + f*x
)*PolyLog[2, E^(I*(c + d*x))])/(a^2*d^2) - (2*b^2*f*(e + f*x)*PolyLog[2, (I
*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d^2) + (2*
b^2*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a
^2*Sqrt[a^2 - b^2]*d^2) - (I*f^2*PolyLog[2, E^((2*I)*(c + d*x))])/(a*d^3) +
```

```
(2*b*f^2*PolyLog[3, -E^(I*(c + d*x))])/(a^2*d^3) - (2*b*f^2*PolyLog[3, E^(
I*(c + d*x))])/(a^2*d^3) - ((2*I)*b^2*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/
(a - Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d^3) + ((2*I)*b^2*f^2*PolyLog[
3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\csc^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\csc^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\csc(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)^2\cot(c+dx)}{ad} - \frac{b\int (e+fx)^2\csc(c+dx)\,dx}{a^2} + \frac{b^2\int \frac{(e+fx)^2}{a+b\sin(c+dx)}\,dx}{a^2} + \frac{(2\ldots}{}$$

$$= -\frac{i(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^2\cot(c+dx)}{ad} + \frac{\left(2b^2\right)\int \frac{}{ib+\ldots}}{}$$

$$= -\frac{i(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^2\cot(c+dx)}{ad} + \frac{2f(e+fx\ldots}{}$$

$$= -\frac{i(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^2\cot(c+dx)}{ad} - \frac{ib^2(e+fx\ldots}{a\ldots}$$

$$= -\frac{i(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^2\cot(c+dx)}{ad} - \frac{ib^2(e+fx\ldots}{a\ldots}$$

$$= -\frac{i(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^2\cot(c+dx)}{ad} - \frac{ib^2(e+fx\ldots}{a\ldots}$$

$$= -\frac{i(e+fx)^2}{ad} + \frac{2b(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)^2\cot(c+dx)}{ad} - \frac{ib^2(e+fx\ldots}{a\ldots}$$

Mathematica [A] time = 12.19, size = 911, normalized size = 1.43

$$\frac{i\left(-2\sqrt{a^2-b^2}\,df(e+fx)\mathrm{Li}_2\left(\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)+2\sqrt{a^2-b^2}\,df(e+fx)\mathrm{Li}_2\left(-\frac{be^{i(c+dx)}}{ia+\sqrt{b^2-a^2}}\right)-i\left(\left(2\sqrt{b^2-a^2}\,\tan^{-1}\left(\frac{ia+be^{i(c\ldots}}{\sqrt{a^2-b\ldots}}\right.\right.\right.\ldots}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Csc[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (((-2*I)*a*d^2*(e + f*x)^2)/(-1 + E^((2*I)*c)) - 2*d*f*(b*d*e - a*f)*x*Log[
1 - E^((-I)*(c + d*x))] - b*d^2*f^2*x^2*Log[1 - E^((-I)*(c + d*x))] + 2*d*f
*(b*d*e + a*f)*x*Log[1 + E^((-I)*(c + d*x))] + b*d^2*f^2*x^2*Log[1 + E^((-I
)*(c + d*x))] + I*d*e*(b*d*e - 2*a*f)*(d*x + I*Log[1 - E^(I*(c + d*x))]) +
```

```
d*e*(b*d*e + 2*a*f)*((-I)*d*x + Log[1 + E^(I*(c + d*x))]) + (2*I)*f*(b*d*e
+ a*f)*PolyLog[2, -E^((-I)*(c + d*x))] + (2*I)*f*(-(b*d*e) + a*f)*PolyLog[2
, E^((-I)*(c + d*x))] + 2*b*f^2*(I*d*x*PolyLog[2, -E^((-I)*(c + d*x))] + Po
lyLog[3, -E^((-I)*(c + d*x))]) - (2*I)*b*f^2*(d*x*PolyLog[2, E^((-I)*(c + d
*x))] - I*PolyLog[3, E^((-I)*(c + d*x))]))/(a^2*d^3) + (I*b^2*(-2*Sqrt[a^2
- b^2]*d*f*(e + f*x)*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b
^2])] + 2*Sqrt[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, -((b*E^(I*(c + d*x)))/(I
*a + Sqrt[-a^2 + b^2]))] - I*(d^2*(2*Sqrt[-a^2 + b^2]*e^2*ArcTan[(I*a + b*E
^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + Sqrt[a^2 - b^2]*f*x*(2*e + f*x)*(Log[1 -
 (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - Log[1 + (b*E^(I*(c + d*
x)))/(I*a + Sqrt[-a^2 + b^2])])) + 2*Sqrt[a^2 - b^2]*f^2*PolyLog[3, (b*E^(I
*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 2*Sqrt[a^2 - b^2]*f^2*PolyLog[3
, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))])))/(a^2*Sqrt[-(a^2 - b^2
)^2]*d^3) + (Csc[c/2]*Csc[c/2 + (d*x)/2]*(e^2*Sin[(d*x)/2] + 2*e*f*x*Sin[(d
*x)/2] + f^2*x^2*Sin[(d*x)/2]))/(2*a*d) + (Sec[c/2]*Sec[c/2 + (d*x)/2]*(e^2
*Sin[(d*x)/2] + 2*e*f*x*Sin[(d*x)/2] + f^2*x^2*Sin[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 0.82, size = 2988, normalized size = 4.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(4*b^3*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) -
 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2))/b)*sin(d*x + c) - 4*b^3*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2
*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 4*b^3*f^2*sqrt(-(a^2 - b^2)/b^2
)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c
) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - 4*b^3*f^2*s
qrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c
) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*
x + c) + 4*(a^2*b - b^3)*f^2*polylog(3, cos(d*x + c) + I*sin(d*x + c))*sin(
d*x + c) + 4*(a^2*b - b^3)*f^2*polylog(3, cos(d*x + c) - I*sin(d*x + c))*si
n(d*x + c) - 4*(a^2*b - b^3)*f^2*polylog(3, -cos(d*x + c) + I*sin(d*x + c))
*sin(d*x + c) - 4*(a^2*b - b^3)*f^2*polylog(3, -cos(d*x + c) - I*sin(d*x +
c))*sin(d*x + c) + 2*(-2*I*b^3*d*f^2*x - 2*I*b^3*d*e*f)*sqrt(-(a^2 - b^2)/b
^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) -
 I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*(2
*I*b^3*d*f^2*x + 2*I*b^3*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*co
s(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*(2*I*b^3*d*f^2*x + 2*I*b^3
*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*
x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b
```

)/b + 1)*sin(d*x + c) + 2*(-2*I*b^3*d*f^2*x - 2*I*b^3*d*e*f)*sqrt(-(a^2 - b
^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x
+ c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c)
- 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(
2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)
*sin(d*x + c) - 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*sqrt(-(a^2 -
b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)
/b^2) - 2*I*a)*sin(d*x + c) + 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)
*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sq
rt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) + 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f
 + b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*
x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) - 2*(b^3*d^2*f^2*
x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)
log(1/2(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*s
in(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + 2*(b^3*d^2*f^2
*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2
)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*
sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 2*(b^3*d^2*f^
2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^
2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*
b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + 2*(b^3*d^2*
f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/
b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) +
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + (-4*I*(a^
2*b - b^3)*d*f^2*x - 4*I*(a^2*b - b^3)*d*e*f + 4*I*(a^3 - a*b^2)*f^2)*dilog
(cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + (4*I*(a^2*b - b^3)*d*f^2*x +
 4*I*(a^2*b - b^3)*d*e*f - 4*I*(a^3 - a*b^2)*f^2)*dilog(cos(d*x + c) - I*si
n(d*x + c))*sin(d*x + c) + (-4*I*(a^2*b - b^3)*d*f^2*x - 4*I*(a^2*b - b^3)*
d*e*f - 4*I*(a^3 - a*b^2)*f^2)*dilog(-cos(d*x + c) + I*sin(d*x + c))*sin(d*
x + c) + (4*I*(a^2*b - b^3)*d*f^2*x + 4*I*(a^2*b - b^3)*d*e*f + 4*I*(a^3 -
a*b^2)*f^2)*dilog(-cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 2*((a^2*b
- b^3)*d^2*f^2*x^2 + (a^2*b - b^3)*d^2*e^2 + 2*(a^3 - a*b^2)*d*e*f + 2*((a^
2*b - b^3)*d^2*e*f + (a^3 - a*b^2)*d*f^2)*x)*log(cos(d*x + c) + I*sin(d*x +
 c) + 1)*sin(d*x + c) - 2*((a^2*b - b^3)*d^2*f^2*x^2 + (a^2*b - b^3)*d^2*e^
2 + 2*(a^3 - a*b^2)*d*e*f + 2*((a^2*b - b^3)*d^2*e*f + (a^3 - a*b^2)*d*f^2)
*x)*log(cos(d*x + c) - I*sin(d*x + c) + 1)*sin(d*x + c) + 2*((a^2*b - b^3)*
d^2*e^2 - 2*(a^3 - a*b^2 + (a^2*b - b^3)*c)*d*e*f + ((a^2*b - b^3)*c^2 + 2*
(a^3 - a*b^2)*c)*f^2)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2)*sin
(d*x + c) + 2*((a^2*b - b^3)*d^2*e^2 - 2*(a^3 - a*b^2 + (a^2*b - b^3)*c)*d*
e*f + ((a^2*b - b^3)*c^2 + 2*(a^3 - a*b^2)*c)*f^2)*log(-1/2*cos(d*x + c) -
1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) + 2*((a^2*b - b^3)*d^2*f^2*x^2 + 2*(
a^2*b - b^3)*c*d*e*f - ((a^2*b - b^3)*c^2 + 2*(a^3 - a*b^2)*c)*f^2 + 2*((a^
2*b - b^3)*d^2*e*f - (a^3 - a*b^2)*d*f^2)*x)*log(-cos(d*x + c) + I*sin(d*x
+ c) + 1)*sin(d*x + c) + 2*((a^2*b - b^3)*d^2*f^2*x^2 + 2*(a^2*b - b^3)*c*d
*e*f - ((a^2*b - b^3)*c^2 + 2*(a^3 - a*b^2)*c)*f^2 + 2*((a^2*b - b^3)*d^2*e

```
*f - (a^3 - a*b^2)*d*f^2)*x)*log(-cos(d*x + c) - I*sin(d*x + c) + 1)*sin(d*
x + c) + 4*((a^3 - a*b^2)*d^2*f^2*x^2 + 2*(a^3 - a*b^2)*d^2*e*f*x + (a^3 -
a*b^2)*d^2*e^2)*cos(d*x + c))/((a^4 - a^2*b^2)*d^3*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [F] time = 3.59, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \left(\csc^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*csc(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*csc(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(sin(c + d*x)^2*(a + b*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2\csc^2\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*csc(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*csc(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.238 $\int \frac{(e+fx)\csc^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=370

$$-\frac{b^2 f \mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2d^2\sqrt{a^2-b^2}}+\frac{b^2 f \mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{a^2d^2\sqrt{a^2-b^2}}-\frac{ib^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2d\sqrt{a^2-b^2}}+\frac{ib^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{a^2d\sqrt{a^2-b^2}}-\frac{ibf\mathrm{Li}_2}{}$$

```
[Out] 2*b*(f*x+e)*arctanh(exp(I*(d*x+c)))/a^2/d-(f*x+e)*cot(d*x+c)/a/d+f*ln(sin(d
*x+c))/a/d^2-I*b*f*polylog(2,-exp(I*(d*x+c)))/a^2/d^2+I*b*f*polylog(2,exp(I
*(d*x+c)))/a^2/d^2-I*b^2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)
))/a^2/d/(a^2-b^2)^(1/2)+I*b^2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)
^(1/2)))/a^2/d/(a^2-b^2)^(1/2)-b^2*f*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b
^2)^(1/2)))/a^2/d^2/(a^2-b^2)^(1/2)+b^2*f*polylog(2,I*b*exp(I*(d*x+c))/(a+(
a^2-b^2)^(1/2)))/a^2/d^2/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.62, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {4535, 4184, 3475, 4183, 2279, 2391, 3323, 2264, 2190}

$$-\frac{b^2 f \mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2d^2\sqrt{a^2-b^2}}+\frac{b^2 f \mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{a^2d^2\sqrt{a^2-b^2}}-\frac{ibf\mathrm{PolyLog}\left(2,-e^{i(c+dx)}\right)}{a^2d^2}+\frac{ibf\mathrm{PolyLog}\left(2,e^{i(c+dx)}\right)}{a^2d^2}-\frac{ib}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Csc[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (2*b*(e + f*x)*ArcTanh[E^(I*(c + d*x))])/(a^2*d) - ((e + f*x)*Cot[c + d*x])
/(a*d) - (I*b^2*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2
]])])/(a^2*Sqrt[a^2 - b^2]*d) + (I*b^2*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)
))/(a + Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d) + (f*Log[Sin[c + d*x]])/
(a*d^2) - (I*b*f*PolyLog[2, -E^(I*(c + d*x))])/(a^2*d^2) + (I*b*f*PolyLog[2
, E^(I*(c + d*x))])/(a^2*d^2) - (b^2*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a
- Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d^2) + (b^2*f*PolyLog[2, (I*b*E^(
I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*Sqrt[a^2 - b^2]*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4535

```
Int[(Csc[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Csc[c +
d*x]^n, x], x] - Dist[b/a, Int[((e + f*x)^m*Csc[c + d*x]^(n - 1))/(a + b*Si
n[c + d*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n
, 0]
```

Rubi steps

$$\int \frac{(e+fx)\csc^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\csc^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\csc(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= -\frac{(e+fx)\cot(c+dx)}{ad} - \frac{b\int (e+fx)\csc(c+dx)\,dx}{a^2} + \frac{b^2\int \frac{e+fx}{a+b\sin(c+dx)}\,dx}{a^2} + \frac{f\int \mathrm{cot}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)\cot(c+dx)}{ad} + \frac{f\log(\sin(c+dx))}{ad^2} + \frac{\left(2b^2\right)\int}{}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)\cot(c+dx)}{ad} + \frac{f\log(\sin(c+dx))}{ad^2} - \frac{\left(2ib^3\right)\int}{}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)\cot(c+dx)}{ad} - \frac{ib^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2\sqrt{a^2-b^2}\,d}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)\cot(c+dx)}{ad} - \frac{ib^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2\sqrt{a^2-b^2}\,d}$$

$$= \frac{2b(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{a^2d} - \frac{(e+fx)\cot(c+dx)}{ad} - \frac{ib^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2\sqrt{a^2-b^2}\,d}$$

Mathematica [B] time = 11.37, size = 933, normalized size = 2.52

$$\frac{(de+dfx)\left(\frac{2(de-cf)\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}} - \frac{if\left(\log\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)\log\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)+\sqrt{b^2-a^2}}{-ia+b+\sqrt{b^2-a^2}}\right)+\mathrm{Li}_2\left(\frac{a\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)}{a+i\left(b+\sqrt{b^2-a^2}\right)}\right)\right)}{\sqrt{b^2-a^2}} + \frac{if\left(\log\left(i\,\mathrm{ta}\right.\right.}{}\right.}{a}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Csc[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-(d*e*Cos[(c + d*x)/2]) + c*f*Cos[(c + d*x)/2] - f*(c + d*x)*Cos[(c + d*x
)/2])*Csc[(c + d*x)/2])/(2*a*d^2) + (f*Log[Sin[c + d*x]])/(a*d^2) - (b*e*Lo
g[Tan[(c + d*x)/2]])/(a^2*d) + (b*c*f*Log[Tan[(c + d*x)/2]])/(a^2*d^2) - (b
*f*((c + d*x)*(Log[1 - E^(I*(c + d*x))] - Log[1 + E^(I*(c + d*x))]) + I*(Po
lyLog[2, -E^(I*(c + d*x))] - PolyLog[2, E^(I*(c + d*x))])))/(a^2*d^2) + (b^
2*(d*e + d*f*x)*((2*(d*e - c*f)*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 -
b^2]])/Sqrt[a^2 - b^2] - (I*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a
^2 + b^2] + a*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])] + PolyLog[
2, (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2
 + b^2] + (I*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*T
an[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 + I*Tan[(
c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Lo
g[1 - I*Tan[(c + d*x)/2]]*Log[-((b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])
/(I*a - b + Sqrt[-a^2 + b^2]))] + PolyLog[2, (a*(I + Tan[(c + d*x)/2]))/(I*
a - b + Sqrt[-a^2 + b^2])]))/Sqrt[-a^2 + b^2] - (I*f*(Log[1 + I*Tan[(c + d*
x)/2]]*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2
 + b^2])] + PolyLog[2, (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 +
b^2]))]))/Sqrt[-a^2 + b^2]))/(a^2*d^2*(d*e - c*f + I*f*Log[1 - I*Tan[(c + d
*x)/2]] - I*f*Log[1 + I*Tan[(c + d*x)/2]])) + (Sec[(c + d*x)/2]*(d*e*Sin[(c
 + d*x)/2] - c*f*Sin[(c + d*x)/2] + f*(c + d*x)*Sin[(c + d*x)/2]))/(2*a*d^2
)
```

fricas [B] time = 0.76, size = 1700, normalized size = 4.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(-2*I*b^3*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*
a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2) + 2*b)/b + 1)*sin(d*x + c) + 2*I*b^3*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2
*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*I*b^3*f*sqrt(-(a
^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x
 + c) - 2*I*b^3*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) +
2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/
b^2) + 2*b)/b + 1)*sin(d*x + c) - 2*I*(a^2*b - b^3)*f*dilog(cos(d*x + c) +
I*sin(d*x + c))*sin(d*x + c) + 2*I*(a^2*b - b^3)*f*dilog(cos(d*x + c) - I*s
in(d*x + c))*sin(d*x + c) - 2*I*(a^2*b - b^3)*f*dilog(-cos(d*x + c) + I*sin
```

```
(d*x + c))*sin(d*x + c) + 2*I*(a^2*b - b^3)*f*dilog(-cos(d*x + c) - I*sin(d
*x + c))*sin(d*x + c) - 2*(b^3*d*e - b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*
b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*s
in(d*x + c) - 2*(b^3*d*e - b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x
+ c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c
) + 2*(b^3*d*e - b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*
I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) + 2*(b^
3*d*e - b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d
*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) - 2*(b^3*d*f*x +
 b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x
+ c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/
b)*sin(d*x + c) + 2*(b^3*d*f*x + b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2
*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 2*(b^3*d*f*x + b^3*c*f)*s
qrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(
b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x
 + c) + 2*(b^3*d*f*x + b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(
d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(
a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 2*((a^2*b - b^3)*d*f*x + (a^2*b -
b^3)*d*e + (a^3 - a*b^2)*f)*log(cos(d*x + c) + I*sin(d*x + c) + 1)*sin(d*x
+ c) - 2*((a^2*b - b^3)*d*f*x + (a^2*b - b^3)*d*e + (a^3 - a*b^2)*f)*log(co
s(d*x + c) - I*sin(d*x + c) + 1)*sin(d*x + c) + 2*((a^2*b - b^3)*d*e - (a^3
 - a*b^2 + (a^2*b - b^3)*c)*f)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) +
 1/2)*sin(d*x + c) + 2*((a^2*b - b^3)*d*e - (a^3 - a*b^2 + (a^2*b - b^3)*c)
*f)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) + 2*((a^
2*b - b^3)*d*f*x + (a^2*b - b^3)*c*f)*log(-cos(d*x + c) + I*sin(d*x + c) +
1)*sin(d*x + c) + 2*((a^2*b - b^3)*d*f*x + (a^2*b - b^3)*c*f)*log(-cos(d*x
+ c) - I*sin(d*x + c) + 1)*sin(d*x + c) + 4*((a^3 - a*b^2)*d*f*x + (a^3 - a
*b^2)*d*e)*cos(d*x + c))/((a^4 - a^2*b^2)*d^2*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.29, size = 766, normalized size = 2.07

$$-\frac{ibf\,\mathrm{dilog}\left(\mathrm{e}^{i(dx+c)}\right)}{a^2d^2}-\frac{2ib^2fc\arctan\left(\frac{2ib\,\mathrm{e}^{i(dx+c)}-2a}{2\sqrt{-a^2+b^2}}\right)}{a^2d^2\sqrt{-a^2+b^2}}-\frac{ib^2f\,\mathrm{dilog}\left(\frac{ia+b\,\mathrm{e}^{i(dx+c)}-\sqrt{-a^2+b^2}}{ia-\sqrt{-a^2+b^2}}\right)}{a^2d^2\sqrt{-a^2+b^2}}+\frac{bf\ln\left(\mathrm{e}^{i(dx+c)}+1\right)x}{a^2d}-\frac{2i}{da\left(\mathrm{e}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*csc(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] -I/a^2/d^2*b*f*dilog(exp(I*(d*x+c)))-2*I/a^2/d^2*b^2*f*c/(-a^2+b^2)^(1/2)*a
rctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))-I/a^2/d^2*b*f*dilog(
exp(I*(d*x+c))+1)+1/a^2/d*b*f*ln(exp(I*(d*x+c))+1)*x-2*I*(f*x+e)/d/a/(exp(2
*I*(d*x+c))-1)-I/a^2/d^2*b^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))
-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))+1/a^2/d*b^2*f/(-a^2+b^2)^(1/2)*l
n((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x+1/a^2/d
^2*b^2*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(
-a^2+b^2)^(1/2)))*c+I/a^2/d^2*b^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*
x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))+1/a^2/d*b*e*ln(exp(I*(d*x+c
))+1)-1/a^2/d*b*e*ln(exp(I*(d*x+c))-1)+1/a^2/d^2*b*f*c*ln(exp(I*(d*x+c))-1)
-2/a/d^2*f*ln(exp(I*(d*x+c)))-1/a^2/d*b^2*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(
I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-1/a^2/d^2*b^2*f/(-a^
2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/
2)))*c+2*I/a^2/d*b^2*e/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*
a)/(-a^2+b^2)^(1/2))+1/a/d^2*f*ln(exp(I*(d*x+c))+1)+1/a/d^2*f*ln(exp(I*(d*x
+c))-1)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(sin(c + d*x)^2*(a + b*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)\csc^2\left(c + dx\right)}{a + b\sin\left(c + dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*csc(d*x+c)**2/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)*csc(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.239 $\int \frac{\csc^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=83

$$\frac{2b^2\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{a^2d\sqrt{a^2-b^2}}+\frac{b\tanh^{-1}(\cos(c+dx))}{a^2d}-\frac{\cot(c+dx)}{ad}$$

```
[Out] b*arctanh(cos(d*x+c))/a^2/d-cot(d*x+c)/a/d+2*b^2*arctan((b+a*tan(1/2*d*x+1/
2*c))/(a^2-b^2)^(1/2))/a^2/d/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {2802, 12, 2747, 3770, 2660, 618, 204}

$$\frac{2b^2\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{a^2d\sqrt{a^2-b^2}}+\frac{b\tanh^{-1}(\cos(c+dx))}{a^2d}-\frac{\cot(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[Csc[c + d*x]^2/(a + b*Sin[c + d*x]),x]
```

```
[Out] (2*b^2*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/(a^2*Sqrt[a^2 - b^
2]*d) + (b*ArcTanh[Cos[c + d*x]])/(a^2*d) - Cot[c + d*x]/(a*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2747

```
Int[1/(((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (
f_.)*(x_)])), x_Symbol] :> Dist[b/(b*c - a*d), Int[1/(a + b*Sin[e + f*x]),
x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*Sin[e + f*x]), x], x] /; FreeQ[{a
, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rule 2802

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_)*((c_.) + (d_.)*sin[(e_.) +
 (f_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b^2*Cos[e + f*x]*(a + b*Sin[e + f*x
])^(m + 1)*(c + d*Sin[e + f*x])^(n + 1))/(f*(m + 1)*(b*c - a*d)*(a^2 - b^2)
), x] + Dist[1/((m + 1)*(b*c - a*d)*(a^2 - b^2)), Int[(a + b*Sin[e + f*x])^
(m + 1)*(c + d*Sin[e + f*x])^n*Simp[a*(b*c - a*d)*(m + 1) + b^2*d*(m + n +
2) - (b^2*c + b*(b*c - a*d)*(m + 1))*Sin[e + f*x] - b^2*d*(m + n + 3)*Sin[e
 + f*x]^2, x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d,
0] && NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0] && LtQ[m, -1] && IntegersQ[2*m
, 2*n] && ((EqQ[a, 0] && IntegerQ[m] &&  !IntegerQ[n]) ||  !(IntegerQ[2*n]
&& LtQ[n, -1] && ((IntegerQ[n] &&  !IntegerQ[m]) || EqQ[a, 0])))
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\csc^2(c+dx)}{a+b\sin(c+dx)}\,dx = -\frac{\cot(c+dx)}{ad} - \frac{\int \frac{b\csc(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$
$$= -\frac{\cot(c+dx)}{ad} - \frac{b\int \frac{\csc(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$
$$= -\frac{\cot(c+dx)}{ad} - \frac{b\int \csc(c+dx)\,dx}{a^2} + \frac{b^2\int \frac{1}{a+b\sin(c+dx)}\,dx}{a^2}$$
$$= \frac{b\tanh^{-1}(\cos(c+dx))}{a^2d} - \frac{\cot(c+dx)}{ad} + \frac{(2b^2)\,\text{Subst}\left(\int \frac{1}{a+2bx+ax^2}\,dx, x, \tan\left(\frac{1}{2}(c+dx)\right)\right.}{a^2d}$$
$$= \frac{b\tanh^{-1}(\cos(c+dx))}{a^2d} - \frac{\cot(c+dx)}{ad} - \frac{(4b^2)\,\text{Subst}\left(\int \frac{1}{-4(a^2-b^2)-x^2}\,dx, x, 2b+2a\tan\left(\right.\right.}{a^2d}$$
$$= \frac{2b^2\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{a^2\sqrt{a^2-b^2}\,d} + \frac{b\tanh^{-1}(\cos(c+dx))}{a^2d} - \frac{\cot(c+dx)}{ad}$$

Mathematica [A] time = 0.46, size = 111, normalized size = 1.34

$$\frac{\frac{4b^2\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}} + a\tan\left(\frac{1}{2}(c+dx)\right) - a\cot\left(\frac{1}{2}(c+dx)\right) - 2b\log\left(\sin\left(\frac{1}{2}(c+dx)\right)\right) + 2b\log\left(\cos\left(\frac{1}{2}(c+dx\right.\right.}{2a^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Csc[c + d*x]^2/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((4*b^2*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] -
 a*Cot[(c + d*x)/2] + 2*b*Log[Cos[(c + d*x)/2]] - 2*b*Log[Sin[(c + d*x)/2]]
 + a*Tan[(c + d*x)/2])/(2*a^2*d)
```

fricas [B] time = 0.53, size = 400, normalized size = 4.82

$$\left[-\frac{\sqrt{-a^2+b^2}\,b^2\log\left(\frac{(2a^2-b^2)\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2+2(a\cos(dx+c)\sin(dx+c)+b\cos(dx+c))\sqrt{-a^2+b^2}}{b^2\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2}\right)\sin(dx+c) - \left(a^2\right.}{2\left(a^4 -\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] [-1/2*(sqrt(-a^2 + b^2)*b^2*log(((2*a^2 - b^2)*cos(d*x + c)^2 - 2*a*b*sin(d
*x + c) - a^2 - b^2 + 2*(a*cos(d*x + c)*sin(d*x + c) + b*cos(d*x + c))*sqrt
(-a^2 + b^2))/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2))*sin(d*
x + c) - (a^2*b - b^3)*log(1/2*cos(d*x + c) + 1/2)*sin(d*x + c) + (a^2*b -
b^3)*log(-1/2*cos(d*x + c) + 1/2)*sin(d*x + c) + 2*(a^3 - a*b^2)*cos(d*x +
c))/((a^4 - a^2*b^2)*d*sin(d*x + c)), -1/2*(2*sqrt(a^2 - b^2)*b^2*arctan(-(
a*sin(d*x + c) + b)/(sqrt(a^2 - b^2)*cos(d*x + c)))*sin(d*x + c) - (a^2*b -
 b^3)*log(1/2*cos(d*x + c) + 1/2)*sin(d*x + c) + (a^2*b - b^3)*log(-1/2*cos
(d*x + c) + 1/2)*sin(d*x + c) + 2*(a^3 - a*b^2)*cos(d*x + c))/((a^4 - a^2*b
^2)*d*sin(d*x + c))]
```

giac [A] time = 2.41, size = 130, normalized size = 1.57

$$\frac{\frac{4\left(\pi\left\lfloor\frac{dx+c}{2\pi}+\frac{1}{2}\right\rfloor\operatorname{sgn}(a)+\arctan\left(\frac{a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+b}{\sqrt{a^2-b^2}}\right)\right)b^2}{\sqrt{a^2-b^2}\,a^2}-\frac{2b\log\left(\left|\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)\right|\right)}{a^2}+\frac{\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)}{a}+\frac{2b\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)-a}{a^2\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)}}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(4*(pi*floor(1/2*(d*x + c)/pi + 1/2)*sgn(a) + arctan((a*tan(1/2*d*x + 1
/2*c) + b)/sqrt(a^2 - b^2)))*b^2/(sqrt(a^2 - b^2)*a^2) - 2*b*log(abs(tan(1/
2*d*x + 1/2*c)))/a^2 + tan(1/2*d*x + 1/2*c)/a + (2*b*tan(1/2*d*x + 1/2*c) -
 a)/(a^2*tan(1/2*d*x + 1/2*c)))/d
```

maple [A] time = 0.00, size = 109, normalized size = 1.31

$$\frac{\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}{2ad}-\frac{1}{2ad\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{b\ln\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,a^2}+\frac{2b^2\arctan\left(\frac{2a\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+2b}{2\sqrt{a^2-b^2}}\right)}{d\,a^2\sqrt{a^2-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(csc(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] 1/2/a/d*tan(1/2*d*x+1/2*c)-1/2/a/d/tan(1/2*d*x+1/2*c)-1/d/a^2*b*ln(tan(1/2*
d*x+1/2*c))+2/d*b^2/a^2/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+
2*b)/(a^2-b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [B] time = 2.96, size = 222, normalized size = 2.67

$$\frac{a\,b^2-a^3}{a^4\,d\,\tan\left(c+d\,x\right)-a^2\,b^2\,d\,\tan\left(c+d\,x\right)}+\frac{b^3\,\ln\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right)-a^2\,b\,\ln\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right)+b^2\,\mathrm{atan}\left(\frac{-a^2\,\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,\sqrt{}}{-a^3-3}\right.}{a^4\,d-a^2\,b^2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(sin(c + d*x)^2*(a + b*sin(c + d*x))),x)
```

```
[Out] (a*b^2 - a^3)/(a^4*d*tan(c + d*x) - a^2*b^2*d*tan(c + d*x)) + (b^3*log(tan(
c/2 + (d*x)/2)) + b^2*atan((b^2*tan(c/2 + (d*x)/2)*(b^2 - a^2)^(1/2)*4i - a
^2*tan(c/2 + (d*x)/2)*(b^2 - a^2)^(1/2)*1i + a*b*(b^2 - a^2)^(1/2)*2i)/(2*a
*b^2 - a^3 + 4*b^3*tan(c/2 + (d*x)/2) - 3*a^2*b*tan(c/2 + (d*x)/2)))*(b^2 -
 a^2)^(1/2)*2i - a^2*b*log(tan(c/2 + (d*x)/2)))/(a^4*d - a^2*b^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\csc^2\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(csc(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral(csc(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.240 $\int \frac{(e+fx)^m \sin^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sin^2(c+dx)(e+fx)^m}{a+b\sin(c+dx)},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*sin(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \sin^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Sin[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
[Out] Defer[Int][((e + f*x)^m*Sin[c + d*x]^2)/(a + b*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \sin^2(c+dx)}{a+b\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \sin^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Mathematica [A] time = 8.24, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \sin^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Sin[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
[Out] Integrate[((e + f*x)^m*Sin[c + d*x]^2)/(a + b*Sin[c + d*x]), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(\cos\left(dx+c\right)^2-1\right)\left(fx+e\right)^m}{b\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
[Out] integral(-(cos(d*x + c)^2 - 1)*(f*x + e)^m/(b*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \sin(dx+c)^2}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*sin(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [A] time = 0.45, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \left(\sin^2(dx+c)\right)}{a+b\sin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*sin(d*x+c)^2/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^m*sin(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \sin(dx+c)^2}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*sin(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sin(c+d\,x)^2\,(e+f\,x)^m}{a+b\,\sin(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)^2*(e + f*x)^m)/(a + b*sin(c + d*x)),x)
[Out] int((sin(c + d*x)^2*(e + f*x)^m)/(a + b*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \sin^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*sin(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m*sin(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.241 $\int \frac{(e+fx)^m \sin(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\sin(c+dx)(e+fx)^m}{a+b\sin(c+dx)},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \sin(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Sin[c + d*x])/(a + b*Sin[c + d*x]),x]
[Out] Defer[Int][((e + f*x)^m*Sin[c + d*x])/(a + b*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \sin(c+dx)}{a+b\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \sin(c+dx)}{a+b\sin(c+dx)}\,dx$$

Mathematica [A] time = 0.83, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \sin(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Sin[c + d*x])/(a + b*Sin[c + d*x]),x]
[Out] Integrate[((e + f*x)^m*Sin[c + d*x])/(a + b*Sin[c + d*x]), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^m \sin\left(dx+c\right)}{b\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*sin(d*x + c)/(b*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx + e\right)^{m} \sin\left(dx + c\right)}{b \sin\left(dx + c\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*sin(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [A] time = 0.19, size = 0, normalized size = 0.00

$$\int \frac{\left(fx + e\right)^{m} \sin\left(dx + c\right)}{a + b \sin\left(dx + c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*sin(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^m*sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx + e\right)^{m} \sin\left(dx + c\right)}{b \sin\left(dx + c\right) + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sin(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*sin(d*x + c)/(b*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\sin\left(c + d\,x\right)\,{\left(e + f\,x\right)}^{m}}{a + b\,\sin\left(c + d\,x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x)^m)/(a + b*sin(c + d*x)),x)
[Out] int((sin(c + d*x)*(e + f*x)^m)/(a + b*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{m}\sin\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*sin(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m*sin(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.242 $\int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{(e+fx)^m}{a+b\sin(c+dx)},x\right)$$

[Out] Unintegrable((f*x+e)^m/(a+b*sin(d*x+c)),x)

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

[In] Int[(e + f*x)^m/(a + b*Sin[c + d*x]),x]

[Out] Defer[Int][(e + f*x)^m/(a + b*Sin[c + d*x]), x]

Rubi steps

$$\int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx = \int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx$$

Mathematica [A] time = 0.31, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[(e + f*x)^m/(a + b*Sin[c + d*x]),x]

[Out] Integrate[(e + f*x)^m/(a + b*Sin[c + d*x]), x]

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^m}{b\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+b*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m/(b*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m/(b*sin(d*x + c) + a), x)
```

maple [A] time = 0.08, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^m/(a+b*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+b*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m/(b*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{{\left(e+f\,x\right)}^m}{a+b\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(a + b*sin(c + d*x)),x)
[Out] int((e + f*x)^m/(a + b*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{m}}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m/(a + b*sin(c + d*x)), x)
```

3.243 $\int \frac{(e+fx)^m \csc(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=29

$$\mathrm{Int}\left(\frac{\csc(c+dx)(e+fx)^m}{a+b\sin(c+dx)},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \csc(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Csc[c + d*x])/(a + b*Sin[c + d*x]),x]
[Out] Defer[Int][((e + f*x)^m*Csc[c + d*x])/(a + b*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \csc(c+dx)}{a+b\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \csc(c+dx)}{a+b\sin(c+dx)}\,dx$$

Mathematica [A] time = 23.73, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \csc(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Csc[c + d*x])/(a + b*Sin[c + d*x]),x]
[Out] Integrate[((e + f*x)^m*Csc[c + d*x])/(a + b*Sin[c + d*x]), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(fx+e\right)^m \csc\left(dx+c\right)}{b\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((f*x + e)^m*csc(d*x + c)/(b*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\csc\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^m*csc(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [A] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\csc\left(dx+c\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^m*csc(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\csc\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^m*csc(d*x + c)/(b*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(e+f\,x\right)^{m}}{\sin\left(c+d\,x\right)\,\left(a+b\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(sin(c + d*x)*(a + b*sin(c + d*x))),x)
```

```
[Out] int((e + f*x)^m/(sin(c + d*x)*(a + b*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^m \csc\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*csc(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)**m*csc(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.244 $\int \frac{(e+fx)^m \csc^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\csc^2(c+dx)(e+fx)^m}{a+b\sin(c+dx)},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*csc(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \csc^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Csc[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] Defer[Int][((e + f*x)^m*Csc[c + d*x]^2)/(a + b*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \csc^2(c+dx)}{a+b\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \csc^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Mathematica [A] time = 42.86, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \csc^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Csc[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] Integrate[((e + f*x)^m*Csc[c + d*x]^2)/(a + b*Sin[c + d*x]), x]
```

fricas [A] time = 0.47, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^m \csc\left(dx+c\right)^2}{b\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*csc(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\csc\left(dx+c\right)^{2}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*csc(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [A] time = 0.16, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\left(\csc^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*csc(d*x+c)^2/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^m*csc(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\csc\left(dx+c\right)^{2}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*csc(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*csc(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(e+f\,x\right)^{m}}{\sin\left(c+d\,x\right)^{2}\,\left(a+b\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(sin(c + d*x)^2*(a + b*sin(c + d*x))),x)
[Out] int((e + f*x)^m/(sin(c + d*x)^2*(a + b*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \csc^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*csc(d*x+c)**2/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)**m*csc(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.245 $\int \frac{(e+fx)\sin(c+dx)}{(a+b\sin(c+dx))^2}\,dx$

Optimal. Leaf size=574

$$\frac{a^2 f\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\left(a^2-b^2\right)^{3/2}}-\frac{a^2 f\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^2\left(a^2-b^2\right)^{3/2}}-\frac{f\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}+\frac{f\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}+\frac{af\log(a+b\sin(c+dx))}{bd^2\left(a^2-b^2\right)}+\frac{ia^2(e+$$

```
[Out] a*f*ln(a+b*sin(d*x+c))/b/(a^2-b^2)/d^2+I*a^2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c)
)/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d-I*a^2*(f*x+e)*ln(1-I*b*exp(I*(d*
x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d+a^2*f*polylog(2,I*b*exp(I*(d
*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2-a^2*f*polylog(2,I*b*exp(I
*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2-a*(f*x+e)*cos(d*x+c)/(
a^2-b^2)/d/(a+b*sin(d*x+c))-I*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^
(1/2)))/b/d/(a^2-b^2)^(1/2)+I*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^
(1/2)))/b/d/(a^2-b^2)^(1/2)-f*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/
2)))/b/d^2/(a^2-b^2)^(1/2)+f*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2
)))/b/d^2/(a^2-b^2)^(1/2)
```

Rubi [A] time = 1.62, antiderivative size = 574, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {6742, 3324, 3323, 2264, 2190, 2279, 2391, 2668, 31}

$$\frac{a^2 f\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\left(a^2-b^2\right)^{3/2}}-\frac{a^2 f\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^2\left(a^2-b^2\right)^{3/2}}-\frac{f\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}+\frac{f\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^2\sqrt{a^2-b^2}}+\frac{af$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sin[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] (I*a^2*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(
a^2 - b^2)^(3/2)*d) - (I*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[
a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d) - (I*a^2*(e + f*x)*Log[1 - (I*b*E^(I*(c
 + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d) + (I*(e + f*x)*Lo
g[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d) +
 (a*f*Log[a + b*Sin[c + d*x]])/(b*(a^2 - b^2)*d^2) + (a^2*f*PolyLog[2, (I*b
*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^2) - (f*Po
lyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d
^2) - (a^2*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a
^2 - b^2)^(3/2)*d^2) + (f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 -
b^2])])/(b*Sqrt[a^2 - b^2]*d^2) - (a*(e + f*x)*Cos[c + d*x])/((a^2 - b^2)*d
*(a + b*Sin[c + d*x]))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
```

```
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\sin(c+dx)}{(a+b\sin(c+dx))^2}\,dx = \int \left(-\frac{a(e+fx)}{b(a+b\sin(c+dx))^2} + \frac{e+fx}{b(a+b\sin(c+dx))}\right)dx$$

$$= \frac{\int \frac{e+fx}{a+b\sin(c+dx)}\,dx}{b} - \frac{a\int \frac{e+fx}{(a+b\sin(c+dx))^2}\,dx}{b}$$

$$= -\frac{a(e+fx)\cos(c+dx)}{\left(a^2-b^2\right)d(a+b\sin(c+dx))} + \frac{2\int \frac{e^{i(c+dx)}(e+fx)}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b} - \frac{a^2\int \frac{e+fx}{a+b\sin(c+dx)}\,dx}{b\left(a^2-b^2\right)} +$$

$$= -\frac{a(e+fx)\cos(c+dx)}{\left(a^2-b^2\right)d(a+b\sin(c+dx))} - \frac{\left(2a^2\right)\int \frac{e^{i(c+dx)}(e+fx)}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b\left(a^2-b^2\right)} - \frac{(2i)\int \frac{e^{i(c+dx)}(e}{2a-2\sqrt{a^2-b^2}-}}{\sqrt{a^2-b}}$$

$$= -\frac{i(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} + \frac{i(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} + \frac{af\log(a+b\sin(c+}{b\left(a^2-b^2\right)d^2}$$

$$= \frac{ia^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d} - \frac{i(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia^2(e+fx)\log\left(1-\right.}{b\left(a^2-b^2\right)^{3/}}$$

$$= \frac{ia^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d} - \frac{i(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia^2(e+fx)\log\left(1-\right.}{b\left(a^2-b^2\right)^{3/}}$$

$$= \frac{ia^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d} - \frac{i(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d} - \frac{ia^2(e+fx)\log\left(1-\right.}{b\left(a^2-b^2\right)^{3/}}$$

Mathematica [B] time = 15.65, size = 2141, normalized size = 3.73

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Sin[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] (-(a*d*e*Cos[c + d*x]) + a*c*f*Cos[c + d*x] - a*f*(c + d*x)*Cos[c + d*x])/(
(a - b)*(a + b)*d^2*(a + b*Sin[c + d*x])) + (((2*a*f*ArcTan[(b + a*Tan[(c +
 d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] - (2*(-(b*d*e) + a*f + b*c*f)*A
rcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] + (a*f*Log
[Sec[(c + d*x)/2]^2])/b - (a*f*Log[Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])]
```

```
)/b - (I*b*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan
[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 - I*Tan[
(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*b*f*
(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]
)/(I*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 + I*Tan[(c + d*x)/2]))/(
a - I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*b*f*(Log[1 - I*Tan[(
c + d*x)/2]]*Log[-((b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a - b + S
qrt[-a^2 + b^2]))] + PolyLog[2, (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[
-a^2 + b^2])]))/Sqrt[-a^2 + b^2] - (I*b*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[
(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])] +
 PolyLog[2, (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))]))/S
qrt[-a^2 + b^2])*(-((b*e)/((a^2 - b^2)*(a + b*Sin[c + d*x]))) + (b*c*f)/((a
^2 - b^2)*d*(a + b*Sin[c + d*x])) - (b*f*(c + d*x))/((a^2 - b^2)*d*(a + b*S
in[c + d*x])) + (a*f*Cos[c + d*x])/((a^2 - b^2)*d*(a + b*Sin[c + d*x]))))/(
d*((a*f*Tan[(c + d*x)/2])/b - (a*f*Cos[(c + d*x)/2]^2*(b*Cos[c + d*x]*Sec[(
c + d*x)/2]^2 + Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c + d*x)/2]))/
(b*(a + b*Sin[c + d*x])) + (a^2*f*Sec[(c + d*x)/2]^2)/((a^2 - b^2)*(1 + (b
+ a*Tan[(c + d*x)/2])^2/(a^2 - b^2))) - (a*(-(b*d*e) + a*f + b*c*f)*Sec[(c
+ d*x)/2]^2)/((a^2 - b^2)*(1 + (b + a*Tan[(c + d*x)/2])^2/(a^2 - b^2))) + (
I*b*f*(((-1/2*I)*Log[-((b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a - b
 + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) - (Log[
1 - (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/
2]^2)/(2*(I + Tan[(c + d*x)/2])) + (a*Log[1 - I*Tan[(c + d*x)/2]]*Sec[(c +
d*x)/2]^2)/(2*(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]))))/Sqrt[-a^2 + b^
2] - (I*b*f*(((I/2)*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a +
b - Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) - ((I/2
)*a*Log[1 - (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))]*Sec
[(c + d*x)/2]^2)/(a + I*a*Tan[(c + d*x)/2]) + (a*Log[1 + I*Tan[(c + d*x)/2]
]*Sec[(c + d*x)/2]^2)/(2*(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]))))/Sqr
t[-a^2 + b^2] - (I*b*f*(((I/2)*Log[1 - (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*
(b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) - ((I
/2)*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2
 + b^2])]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) + (a*Log[1 - I*Tan[(
c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(2*(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)
/2]))))/Sqrt[-a^2 + b^2] + (I*b*f*(((-1/2*I)*Log[1 - (a*(1 + I*Tan[(c + d*x
)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c +
d*x)/2]) + ((I/2)*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b
+ Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) + (a*Log[
1 + I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(2*(b + Sqrt[-a^2 + b^2] + a*Ta
n[(c + d*x)/2]))))/Sqrt[-a^2 + b^2]))
```

fricas [B] time = 0.70, size = 1514, normalized size = 2.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/2*((-I*b^4*f*sin(d*x + c) - I*a*b^3*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*
(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (I*b^4*f*sin(d*x + c) + I*a*b^3*
f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c)
 - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b +
1) + (I*b^4*f*sin(d*x + c) + I*a*b^3*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(
-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-I*b^4*f*sin(d*x + c) - I*a*b^3
*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x +
c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
+ 1) - (a*b^3*d*f*x + a*b^3*c*f + (b^4*d*f*x + b^4*c*f)*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos
(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (a*b^3*d*f
*x + a*b^3*c*f + (b^4*d*f*x + b^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*s
in(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - (a*b^3*d*f*x + a*b^3*c*f +
(b^4*d*f*x + b^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*
cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2) + 2*b)/b) + (a*b^3*d*f*x + a*b^3*c*f + (b^4*d*f*x + b^4
*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2
*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2) + 2*b)/b) - 2*((a^3*b - a*b^3)*d*f*x + (a^3*b - a*b^3)*d*e)*cos(d*x + c
) + ((a^3*b - a*b^3)*f*sin(d*x + c) + (a^4 - a^2*b^2)*f - (a*b^3*d*e - a*b^
3*c*f + (b^4*d*e - b^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*c
os(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + ((
a^3*b - a*b^3)*f*sin(d*x + c) + (a^4 - a^2*b^2)*f - (a*b^3*d*e - a*b^3*c*f
+ (b^4*d*e - b^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(d*x
 + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + ((a^3*b
- a*b^3)*f*sin(d*x + c) + (a^4 - a^2*b^2)*f + (a*b^3*d*e - a*b^3*c*f + (b^4
*d*e - b^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c)
 + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + ((a^3*b - a*b
^3)*f*sin(d*x + c) + (a^4 - a^2*b^2)*f + (a*b^3*d*e - a*b^3*c*f + (b^4*d*e
- b^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) - 2*
I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a))/((a^4*b^2 - 2*a^2*b
^4 + b^6)*d^2*sin(d*x + c) + (a^5*b - 2*a^3*b^3 + a*b^5)*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\sin\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sin(d*x + c)/(b*sin(d*x + c) + a)^2, x)
```

maple [A] time = 1.45, size = 750, normalized size = 1.31

$$\frac{2ia\left(fx+e\right)\left(b-ia\,\mathrm{e}^{i(dx+c)}\right)}{b\left(-a^2+b^2\right)d\left(b\,\mathrm{e}^{2i(dx+c)}-b+2ia\,\mathrm{e}^{i(dx+c)}\right)}+\frac{af\ln\left(ib\,\mathrm{e}^{2i(dx+c)}-2a\,\mathrm{e}^{i(dx+c)}-ib\right)}{b\,d^2\left(a^2-b^2\right)}-\frac{2af\ln\left(\mathrm{e}^{i(dx+c)}\right)}{b\,d^2\left(a^2-b^2\right)}+\frac{2ibcf\arctan}{d^2\left(a^2-b^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c))^2,x)
```

```
[Out] 2*I*a*(f*x+e)*(b-I*a*exp(I*(d*x+c)))/b/(-a^2+b^2)/d/(b*exp(2*I*(d*x+c))-b+2
*I*a*exp(I*(d*x+c)))+1/b/d^2/(a^2-b^2)*a*f*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(
I*(d*x+c))-I*b)-2/b/d^2/(a^2-b^2)*a*f*ln(exp(I*(d*x+c)))+2*I*b/d^2/(a^2-b^2
)*c*f/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/
2))-2*I*b/d/(a^2-b^2)*e/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2
*a)/(-a^2+b^2)^(1/2))+I*b/d^2/(a^2-b^2)*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp
(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))-I*b/d^2/(a^2-b^2)*f/(
-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^
2)^(1/2)))+b/d/(a^2-b^2)*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+
b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x+b/d^2/(a^2-b^2)*f/(-a^2+b^2)^(1/2)*ln
((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-b/d/(a^2
-b^2)*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-
a^2+b^2)^(1/2)))*x-b/d^2/(a^2-b^2)*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+
c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x))/(a + b*sin(c + d*x))^2,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c))**2,x)
[Out] Timed out
```

3.246 $\int \frac{(e+fx)^2\sin(c+dx)}{(a+b\sin(c+dx))^2}\,dx$

Optimal. Leaf size=1106

$$\frac{i(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)a^2}{b\left(a^2-b^2\right)^{3/2}d}-\frac{i(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)a^2}{b\left(a^2-b^2\right)^{3/2}d}+\frac{2f(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)a^2}{b\left(a^2-b^2\right)^{3/2}d^2}-\frac{2f(e+fx)\text{Li}_2}{b\left(a^2-b\right.}$$

```
[Out] 2*I*a^2*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(
3/2)/d^3+2*a*f*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-
b^2)/d^2-2*I*a^2*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a
^2-b^2)^(3/2)/d^3+2*a*f*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2))
)/b/(a^2-b^2)/d^2-2*I*a*f^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)
))/b/(a^2-b^2)/d^3-I*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))
/b/d/(a^2-b^2)^(1/2)+2*a^2*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b
^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2+I*a^2*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(
a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d-2*a^2*f*(f*x+e)*polylog(2,I*b*exp(I
*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2-2*I*f^2*polylog(3,I*b*
exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)^(1/2)-I*a*(f*x+e)^2/b/(
a^2-b^2)/d-a*(f*x+e)^2*cos(d*x+c)/(a^2-b^2)/d/(a+b*sin(d*x+c))-I*a^2*(f*x+e
)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d+2*I*f^
2*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)^(1/2)-2
*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^2/(a^2-b^2
)^(1/2)+2*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^2
/(a^2-b^2)^(1/2)-2*I*a*f^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2))
)/b/(a^2-b^2)/d^3+I*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/
b/d/(a^2-b^2)^(1/2)
```

Rubi [A] time = 2.56, antiderivative size = 1106, normalized size of antiderivative = 1.00, number of steps used = 30, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423, Rules used = {6742, 3324, 3323, 2264, 2190, 2531, 2282, 6589, 4519, 2279, 2391}

$$\frac{i(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)a^2}{b\left(a^2-b^2\right)^{3/2}d}-\frac{i(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)a^2}{b\left(a^2-b^2\right)^{3/2}d}+\frac{2f(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)a^2}{b\left(a^2-b^2\right)^{3/2}d^2}-\frac{2f(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sin[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] ((-I)*a*(e + f*x)^2)/(b*(a^2 - b^2)*d) + (2*a*f*(e + f*x)*Log[1 - (I*b*E^(I
*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^2) + (I*a^2*(e + f*x)
```

```
^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/
2)*d) - (I*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])]
)/(b*Sqrt[a^2 - b^2]*d) + (2*a*f*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a
 + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^2) - (I*a^2*(e + f*x)^2*Log[1 - (I*b
*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d) + (I*(e +
 f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 -
 b^2]*d) - ((2*I)*a*f^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^
2])])/(b*(a^2 - b^2)*d^3) + (2*a^2*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*
x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^2) - (2*f*(e + f*x)*Pol
yLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^
2) - ((2*I)*a*f^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/
(b*(a^2 - b^2)*d^3) - (2*a^2*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(
a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^2) + (2*f*(e + f*x)*PolyLog[2
, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^2) + (
(2*I)*a^2*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(
a^2 - b^2)^(3/2)*d^3) - ((2*I)*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sq
rt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^3) - ((2*I)*a^2*f^2*PolyLog[3, (I*b*E
^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^3) + ((2*I)*
f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 -
b^2]*d^3) - (a*(e + f*x)^2*Cos[c + d*x])/((a^2 - b^2)*d*(a + b*Sin[c + d*x]
))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\sin(c+dx)}{(a+b\sin(c+dx))^2}\,dx = \int \left(-\frac{a(e+fx)^2}{b(a+b\sin(c+dx))^2} + \frac{(e+fx)^2}{b(a+b\sin(c+dx))}\right)dx$$

$$= \frac{\int \frac{(e+fx)^2}{a+b\sin(c+dx)}\,dx}{b} - \frac{a\int \frac{(e+fx)^2}{(a+b\sin(c+dx))^2}\,dx}{b}$$

$$= -\frac{a(e+fx)^2\cos(c+dx)}{\left(a^2-b^2\right)d(a+b\sin(c+dx))} + \frac{2\int \frac{e^{i(c+dx)}(e+fx)^2}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b} - \frac{a^2\int \frac{(e+fx)^2}{a+b\sin(c+dx)}\,dx}{b\left(a^2-b^2\right)}$$

$$= -\frac{ia(e+fx)^2}{b\left(a^2-b^2\right)d} - \frac{a(e+fx)^2\cos(c+dx)}{\left(a^2-b^2\right)d(a+b\sin(c+dx))} - \frac{\left(2a^2\right)\int \frac{e^{i(c+dx)}(e+fx)^2}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b\left(a^2-b^2\right)} -$$

$$= -\frac{ia(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} - \frac{i(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d}$$

$$= -\frac{ia(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} + \frac{ia^2(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d}$$

$$= -\frac{ia(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} + \frac{ia^2(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d}$$

$$= -\frac{ia(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} + \frac{ia^2(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d}$$

$$= -\frac{ia(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} + \frac{ia^2(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d}$$

Mathematica [B] time = 25.43, size = 3759, normalized size = 3.40

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sin[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] (2*b*e*f*((Pi*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 -
b^2] + (2*(-c + Pi/2 - d*x)*ArcTanh[((a + b)*Cot[(-c + Pi/2 - d*x)/2])/Sqrt
[-a^2 + b^2]] - 2*(-c + ArcCos[-(a/b)])*ArcTanh[((-a + b)*Tan[(-c + Pi/2 -
d*x)/2])/Sqrt[-a^2 + b^2]] + (ArcCos[-(a/b)] - (2*I)*(ArcTanh[((a + b)*Cot[
(-c + Pi/2 - d*x)/2])/Sqrt[-a^2 + b^2]] - ArcTanh[((-a + b)*Tan[(-c + Pi/2
- d*x)/2])/Sqrt[-a^2 + b^2]]))*Log[Sqrt[-a^2 + b^2]/(Sqrt[2]*Sqrt[b]*E^((I/
2)*(-c + Pi/2 - d*x))*Sqrt[a + b*Sin[c + d*x]])] + (ArcCos[-(a/b)] + (2*I)*
(ArcTanh[((a + b)*Cot[(-c + Pi/2 - d*x)/2])/Sqrt[-a^2 + b^2]] - ArcTanh[((-
a + b)*Tan[(-c + Pi/2 - d*x)/2])/Sqrt[-a^2 + b^2]]))*Log[(Sqrt[-a^2 + b^2]*
E^((I/2)*(-c + Pi/2 - d*x)))/(Sqrt[2]*Sqrt[b]*Sqrt[a + b*Sin[c + d*x]])] -
(ArcCos[-(a/b)] + (2*I)*ArcTanh[((-a + b)*Tan[(-c + Pi/2 - d*x)/2])/Sqrt[-a
^2 + b^2]])*Log[1 - ((a - I*Sqrt[-a^2 + b^2])*(a + b - Sqrt[-a^2 + b^2]*Tan
[(-c + Pi/2 - d*x)/2]))/(b*(a + b + Sqrt[-a^2 + b^2]*Tan[(-c + Pi/2 - d*x)/
2]))] + (-ArcCos[-(a/b)] + (2*I)*ArcTanh[((-a + b)*Tan[(-c + Pi/2 - d*x)/2]
)/Sqrt[-a^2 + b^2]])*Log[1 - ((a + I*Sqrt[-a^2 + b^2])*(a + b - Sqrt[-a^2 +
 b^2]*Tan[(-c + Pi/2 - d*x)/2]))/(b*(a + b + Sqrt[-a^2 + b^2]*Tan[(-c + Pi/
2 - d*x)/2]))] + I*(PolyLog[2, ((a - I*Sqrt[-a^2 + b^2])*(a + b - Sqrt[-a^2
 + b^2]*Tan[(-c + Pi/2 - d*x)/2]))/(b*(a + b + Sqrt[-a^2 + b^2]*Tan[(-c + P
i/2 - d*x)/2]))] - PolyLog[2, ((a + I*Sqrt[-a^2 + b^2])*(a + b - Sqrt[-a^2
+ b^2]*Tan[(-c + Pi/2 - d*x)/2]))/(b*(a + b + Sqrt[-a^2 + b^2]*Tan[(-c + Pi
/2 - d*x)/2]))]))/Sqrt[-a^2 + b^2]))/((-a^2 + b^2)*d^2) + (2*a^2*f^2*Cot[c]
*((Pi*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] + (
2*(-c + Pi/2 - d*x)*ArcTanh[((a + b)*Cot[(-c + Pi/2 - d*x)/2])/Sqrt[-a^2 +
b^2]] - 2*(-c + ArcCos[-(a/b)])*ArcTanh[((-a + b)*Tan[(-c + Pi/2 - d*x)/2])
/Sqrt[-a^2 + b^2]] + (ArcCos[-(a/b)] - (2*I)*(ArcTanh[((a + b)*Cot[(-c + Pi
/2 - d*x)/2])/Sqrt[-a^2 + b^2]] - ArcTanh[((-a + b)*Tan[(-c + Pi/2 - d*x)/2
])/Sqrt[-a^2 + b^2]]))*Log[Sqrt[-a^2 + b^2]/(Sqrt[2]*Sqrt[b]*E^((I/2)*(-c +
 Pi/2 - d*x))*Sqrt[a + b*Sin[c + d*x]])] + (ArcCos[-(a/b)] + (2*I)*(ArcTanh
[((a + b)*Cot[(-c + Pi/2 - d*x)/2])/Sqrt[-a^2 + b^2]] - ArcTanh[((-a + b)*T
an[(-c + Pi/2 - d*x)/2])/Sqrt[-a^2 + b^2]]))*Log[(Sqrt[-a^2 + b^2]*E^((I/2)
*(-c + Pi/2 - d*x)))/(Sqrt[2]*Sqrt[b]*Sqrt[a + b*Sin[c + d*x]])] - (ArcCos[
-(a/b)] + (2*I)*ArcTanh[((-a + b)*Tan[(-c + Pi/2 - d*x)/2])/Sqrt[-a^2 + b^2
]])*Log[1 - ((a - I*Sqrt[-a^2 + b^2])*(a + b - Sqrt[-a^2 + b^2]*Tan[(-c + P
i/2 - d*x)/2]))/(b*(a + b + Sqrt[-a^2 + b^2]*Tan[(-c + Pi/2 - d*x)/2]))] +
(-ArcCos[-(a/b)] + (2*I)*ArcTanh[((-a + b)*Tan[(-c + Pi/2 - d*x)/2])/Sqrt[-
a^2 + b^2]])*Log[1 - ((a + I*Sqrt[-a^2 + b^2])*(a + b - Sqrt[-a^2 + b^2]*Ta
n[(-c + Pi/2 - d*x)/2]))/(b*(a + b + Sqrt[-a^2 + b^2]*Tan[(-c + Pi/2 - d*x)
/2]))] + I*(PolyLog[2, ((a - I*Sqrt[-a^2 + b^2])*(a + b - Sqrt[-a^2 + b^2]*
Tan[(-c + Pi/2 - d*x)/2]))/(b*(a + b + Sqrt[-a^2 + b^2]*Tan[(-c + Pi/2 - d*
x)/2]))] - PolyLog[2, ((a + I*Sqrt[-a^2 + b^2])*(a + b - Sqrt[-a^2 + b^2]*T
an[(-c + Pi/2 - d*x)/2]))/(b*(a + b + Sqrt[-a^2 + b^2]*Tan[(-c + Pi/2 - d*x
)/2]))]))/Sqrt[-a^2 + b^2]))/(b*(-a^2 + b^2)*d^3) + (b*E^(I*c)*f^2*(d^2*x^2
*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)
])] - d^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2
)*E^((2*I)*c)])] - (2*I)*d*x*PolyLog[2, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c)
```

```
+ I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + (2*I)*d*x*PolyLog[2, -((b*E^(I*(2*c
+ d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + 2*PolyLog[3, (I
*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 2*P
olyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)
*c)]))]))/((-a^2 + b^2)*d^3*Sqrt[(-a^2 + b^2)*E^((2*I)*c)]) + ((2*I)*b*e^2*
ArcTan[(I*b*Cos[c] - I*(-a + b*Sin[c])*Tan[(d*x)/2])/Sqrt[-a^2 + b^2*Cos[c]
^2 + b^2*Sin[c]^2]])/((-a^2 + b^2)*d*Sqrt[-a^2 + b^2*Cos[c]^2 + b^2*Sin[c]^
2]) + ((4*I)*a^2*e*f*ArcTan[(I*b*Cos[c] - I*(-a + b*Sin[c])*Tan[(d*x)/2])/S
qrt[-a^2 + b^2*Cos[c]^2 + b^2*Sin[c]^2]]*Cot[c])/(b*(-a^2 + b^2)*d^2*Sqrt[-
a^2 + b^2*Cos[c]^2 + b^2*Sin[c]^2]) + (2*a*f^2*Csc[c]*(-1/2*(x^2*Cos[c])/b
+ (x*(d*x*Cos[c] - (2*a*ArcTan[(Sec[(d*x)/2]*(Cos[c] - I*Sin[c])*(b*Cos[c +
 (d*x)/2] + a*Sin[(d*x)/2]))/(Sqrt[a^2 - b^2]*Sqrt[(Cos[c] - I*Sin[c])^2])]
*Cos[c]*(Cos[c] - I*Sin[c]))/(Sqrt[a^2 - b^2]*Sqrt[(Cos[c] - I*Sin[c])^2])
- Log[a + b*Sin[c + d*x]]*Sin[c]))/(b*d) + (-((a*Cos[c]*((-I)*d*x*(Log[1 +
(I*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] - Log[1 - (I*b*E^(I*(c + d*x)
))/(a + Sqrt[a^2 - b^2])]) - PolyLog[2, ((-I)*b*E^(I*(c + d*x)))/(-a + Sqrt
[a^2 - b^2])] + PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])]))/(
Sqrt[a^2 - b^2]*d)) + (2*a*x*ArcTan[(Sec[(d*x)/2]*(Cos[c] - I*Sin[c])*(b*Co
s[c + (d*x)/2] + a*Sin[(d*x)/2]))/(Sqrt[a^2 - b^2]*Sqrt[(Cos[c] - I*Sin[c])
^2])]*Cos[c]*(Cos[c] - I*Sin[c]))/(Sqrt[a^2 - b^2]*Sqrt[(Cos[c] - I*Sin[c])
^2]) + ((c + d*x)*Log[a + b*Sin[c + d*x]]*Sin[c])/d - (b*(((c + d*x)*Log[a
+ b*Sin[c + d*x]])/b - ((-1/2*I)*(-c + Pi/2 - d*x)^2 + (4*I)*ArcSin[Sqrt[(a
 + b)/b]/Sqrt[2]]*ArcTan[((a - b)*Tan[(-c + Pi/2 - d*x)/2])/Sqrt[a^2 - b^2]
] + (-c + Pi/2 - d*x + 2*ArcSin[Sqrt[(a + b)/b]/Sqrt[2]])*Log[1 + ((a - Sqr
t[a^2 - b^2])*E^(I*(-c + Pi/2 - d*x)))/b] + (-c + Pi/2 - d*x - 2*ArcSin[Sqr
t[(a + b)/b]/Sqrt[2]])*Log[1 + ((a + Sqrt[a^2 - b^2])*E^(I*(-c + Pi/2 - d*x
)))/b] - (-c + Pi/2 - d*x)*Log[a + b*Sin[c + d*x]] - I*(PolyLog[2, ((-a - S
qrt[a^2 - b^2])*E^(I*(-c + Pi/2 - d*x)))/b] + PolyLog[2, ((-a + Sqrt[a^2 -
b^2])*E^(I*(-c + Pi/2 - d*x)))/b]))/b)*Sin[c])/d)/(b*d)))/((-a^2 + b^2)*d)
- (2*a*e*f*Csc[c]*(-(b*d*x*Cos[c]) + b*Log[a + b*Cos[d*x]*Sin[c] + b*Cos[c]
*Sin[d*x]]*Sin[c] + ((2*I)*a*b*ArcTan[(I*b*Cos[c] - I*(-a + b*Sin[c])*Tan[(
d*x)/2])/Sqrt[-a^2 + b^2*Cos[c]^2 + b^2*Sin[c]^2]]*Cos[c])/Sqrt[-a^2 + b^2*
Cos[c]^2 + b^2*Sin[c]^2]))/((-a^2 + b^2)*d^2*(b^2*Cos[c]^2 + b^2*Sin[c]^2))
 + (Csc[c/2]*Sec[c/2]*(a^2*e^2*Cos[c] + 2*a^2*e*f*x*Cos[c] + a^2*f^2*x^2*Co
s[c] + a*b*e^2*Sin[d*x] + 2*a*b*e*f*x*Sin[d*x] + a*b*f^2*x^2*Sin[d*x]))/(2*
(a - b)*b*(a + b)*d*(a + b*Sin[c + d*x]))
```

fricas [C] time = 0.78, size = 3136, normalized size = 2.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/4*(4*(b^4*f^2*sin(d*x + c) + a*b^3*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3,
```

```
1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 4*(b^4*f^2*sin(d*x + c) + a*b^3*f^2)*
sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c
) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 4*(b
^4*f^2*sin(d*x + c) + a*b^3*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*
I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2))/b) - 4*(b^4*f^2*sin(d*x + c) + a*b^3*f^2)*sqrt(-(a
^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(
b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 4*((a^3*b -
 a*b^3)*d^2*f^2*x^2 + 2*(a^3*b - a*b^3)*d^2*e*f*x + (a^3*b - a*b^3)*d^2*e^2
)*cos(d*x + c) + (4*I*(a^3*b - a*b^3)*f^2*sin(d*x + c) + 4*I*(a^4 - a^2*b^2
)*f^2 + 2*(-2*I*a*b^3*d*f^2*x - 2*I*a*b^3*d*e*f + (-2*I*b^4*d*f^2*x - 2*I*b
^4*d*e*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*cos(d*x +
 c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 -
 b^2)/b^2) + 2*b)/b + 1) + (4*I*(a^3*b - a*b^3)*f^2*sin(d*x + c) + 4*I*(a^4
 - a^2*b^2)*f^2 + 2*(2*I*a*b^3*d*f^2*x + 2*I*a*b^3*d*e*f + (2*I*b^4*d*f^2*x
 + 2*I*b^4*d*e*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*c
os(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-4*I*(a^3*b - a*b^3)*f^2*sin(d*x + c) -
 4*I*(a^4 - a^2*b^2)*f^2 + 2*(2*I*a*b^3*d*f^2*x + 2*I*a*b^3*d*e*f + (2*I*b^
4*d*f^2*x + 2*I*b^4*d*e*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2
*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-4*I*(a^3*b - a*b^3)*f^2*sin(
d*x + c) - 4*I*(a^4 - a^2*b^2)*f^2 + 2*(-2*I*a*b^3*d*f^2*x - 2*I*a*b^3*d*e*
f + (-2*I*b^4*d*f^2*x - 2*I*b^4*d*e*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) +
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(2*(a^4 - a^2*b^
2)*d*e*f - 2*(a^4 - a^2*b^2)*c*f^2 + 2*((a^3*b - a*b^3)*d*e*f - (a^3*b - a*
b^3)*c*f^2)*sin(d*x + c) - (a*b^3*d^2*e^2 - 2*a*b^3*c*d*e*f + a*b^3*c^2*f^2
 + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*sin(d*x + c))*sqrt(-(a^2 - b
^2)/b^2))*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)
/b^2) + 2*I*a) + 2*(2*(a^4 - a^2*b^2)*d*e*f - 2*(a^4 - a^2*b^2)*c*f^2 + 2*(
(a^3*b - a*b^3)*d*e*f - (a^3*b - a*b^3)*c*f^2)*sin(d*x + c) - (a*b^3*d^2*e^
2 - 2*a*b^3*c*d*e*f + a*b^3*c^2*f^2 + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^
2*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(d*x + c) - 2*I*b*s
in(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(2*(a^4 - a^2*b^2)*d*
e*f - 2*(a^4 - a^2*b^2)*c*f^2 + 2*((a^3*b - a*b^3)*d*e*f - (a^3*b - a*b^3)*
c*f^2)*sin(d*x + c) + (a*b^3*d^2*e^2 - 2*a*b^3*c*d*e*f + a*b^3*c^2*f^2 + (b
^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2))*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2
) + 2*I*a) + 2*(2*(a^4 - a^2*b^2)*d*e*f - 2*(a^4 - a^2*b^2)*c*f^2 + 2*((a^3
*b - a*b^3)*d*e*f - (a^3*b - a*b^3)*c*f^2)*sin(d*x + c) + (a*b^3*d^2*e^2 -
2*a*b^3*c*d*e*f + a*b^3*c^2*f^2 + (b^4*d^2*e^2 - 2*b^4*c*d*e*f + b^4*c^2*f^
2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) - 2*I*b*sin(
d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(2*(a^4 - a^2*b^2)*d*f^2
```

```
*x + 2*(a^4 - a^2*b^2)*c*f^2 + 2*((a^3*b - a*b^3)*d*f^2*x + (a^3*b - a*b^3)
*c*f^2)*sin(d*x + c) - (a*b^3*d^2*f^2*x^2 + 2*a*b^3*d^2*e*f*x + 2*a*b^3*c*d
*e*f - a*b^3*c^2*f^2 + (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f -
 b^4*c^2*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(2*I*a*cos(d*x
+ c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2
- b^2)/b^2) + 2*b)/b) + 2*(2*(a^4 - a^2*b^2)*d*f^2*x + 2*(a^4 - a^2*b^2)*c*
f^2 + 2*((a^3*b - a*b^3)*d*f^2*x + (a^3*b - a*b^3)*c*f^2)*sin(d*x + c) + (a
*b^3*d^2*f^2*x^2 + 2*a*b^3*d^2*e*f*x + 2*a*b^3*c*d*e*f - a*b^3*c^2*f^2 + (b
^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*sin(d*x + c
))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) -
 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2
*(2*(a^4 - a^2*b^2)*d*f^2*x + 2*(a^4 - a^2*b^2)*c*f^2 + 2*((a^3*b - a*b^3)*
d*f^2*x + (a^3*b - a*b^3)*c*f^2)*sin(d*x + c) - (a*b^3*d^2*f^2*x^2 + 2*a*b^
3*d^2*e*f*x + 2*a*b^3*c*d*e*f - a*b^3*c^2*f^2 + (b^4*d^2*f^2*x^2 + 2*b^4*d^
2*e*f*x + 2*b^4*c*d*e*f - b^4*c^2*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b
*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(2*(a^4 - a^2*b^2)*d*f^
2*x + 2*(a^4 - a^2*b^2)*c*f^2 + 2*((a^3*b - a*b^3)*d*f^2*x + (a^3*b - a*b^3
)*c*f^2)*sin(d*x + c) + (a*b^3*d^2*f^2*x^2 + 2*a*b^3*d^2*e*f*x + 2*a*b^3*c*
d*e*f - a*b^3*c^2*f^2 + (b^4*d^2*f^2*x^2 + 2*b^4*d^2*e*f*x + 2*b^4*c*d*e*f
- b^4*c^2*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(-2*I*a*cos(d*
x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^
2 - b^2)/b^2) + 2*b)/b))/((a^4*b^2 - 2*a^2*b^4 + b^6)*d^3*sin(d*x + c) + (a
^5*b - 2*a^3*b^3 + a*b^5)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \sin\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="giac")
[Out] integrate((f*x + e)^2*sin(d*x + c)/(b*sin(d*x + c) + a)^2, x)
```

maple [F] time = 2.78, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \sin\left(dx+c\right)}{\left(a+b\sin\left(dx+c\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c))^2,x)
```

```
[Out] int((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c))^2,x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x))^2,x)
```

```
[Out] \text{Hanged}
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sin(d*x+c)/(a+b*sin(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.247 $\int \frac{(e+fx)^3 \sin(c+dx)}{(a+b\sin(c+dx))^2}\, dx$

Optimal. Leaf size=1512

$$\frac{6a\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)f^3}{b\left(a^2-b^2\right)d^4}+\frac{6a\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)f^3}{b\left(a^2-b^2\right)d^4}+\frac{6\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)f^3}{b\sqrt{a^2-b^2}\,d^4}-\frac{6a^2\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)f^3}{b\left(a^2-b^2\right)^{3/2}d^4}-\frac{6\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)f^3}{b\sqrt{a^2-b^2}\,d^4}+6a$$

```
[Out] -6*I*a*f^2*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2
-b^2)/d^3+3*a*f*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a
^2-b^2)/d^2-6*I*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)
))/b/d^3/(a^2-b^2)^(1/2)+3*a*f*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^
2)^(1/2)))/b/(a^2-b^2)/d^2-I*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)
^(1/2)))/b/d/(a^2-b^2)^(1/2)-6*I*a^2*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c
))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^3+3*a^2*f*(f*x+e)^2*polylog(2,I
*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2+6*I*f^2*(f*x+e
)*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)^(1/2)-3
*a^2*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b
^2)^(3/2)/d^2+6*a*f^3*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(
a^2-b^2)/d^4-6*I*a*f^2*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1
/2)))/b/(a^2-b^2)/d^3+6*a*f^3*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/
2)))/b/(a^2-b^2)/d^4+I*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)
))/b/d/(a^2-b^2)^(1/2)-6*a^2*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^
(1/2)))/b/(a^2-b^2)^(3/2)/d^4+6*a^2*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^
2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^4-a*(f*x+e)^3*cos(d*x+c)/(a^2-b^2)/d/(a+
b*sin(d*x+c))-I*a^2*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/
b/(a^2-b^2)^(3/2)/d-I*a*(f*x+e)^3/b/(a^2-b^2)/d-3*f*(f*x+e)^2*polylog(2,I*b
*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^2/(a^2-b^2)^(1/2)+3*f*(f*x+e)^2*po
lylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^2/(a^2-b^2)^(1/2)+I*a^2
*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d
+6*I*a^2*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a
^2-b^2)^(3/2)/d^3+6*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b
/d^4/(a^2-b^2)^(1/2)-6*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2))
)/b/d^4/(a^2-b^2)^(1/2)
```

Rubi [A] time = 3.07, antiderivative size = 1512, normalized size of antiderivative = 1.00, number of steps used = 36, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {6742, 3324, 3323, 2264, 2190, 2531, 6609, 2282, 6589, 4519}

$$\frac{6a\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)f^3}{b\left(a^2-b^2\right)d^4}+\frac{6a\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)f^3}{b\left(a^2-b^2\right)d^4}+\frac{6\text{PolyLog}\left(4,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)f^3}{b\sqrt{a^2-b^2}\,d^4}-\frac{6a^2\text{PolyLog}\left(4,\frac{ibe^{i(c+\cdots}}{a-\sqrt{a^2-\cdots}}\right.}{b\left(a^2-b^2\right)^{3/2}d^4}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sin[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] ((-I)*a*(e + f*x)^3)/(b*(a^2 - b^2)*d) + (3*a*f*(e + f*x)^2*Log[1 - (I*b*E^
(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^2) + (I*a^2*(e + f*
x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(
3/2)*d) - (I*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2]
)])/(b*Sqrt[a^2 - b^2]*d) + (3*a*f*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x))
)/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^2) - (I*a^2*(e + f*x)^3*Log[1 -
(I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d) + (I*
(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a
^2 - b^2]*d) - ((6*I)*a*f^2*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a -
 Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^3) + (3*a^2*f*(e + f*x)^2*PolyLog[2, (
I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^2) - (3
*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*
Sqrt[a^2 - b^2]*d^2) - ((6*I)*a*f^2*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x
)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^3) - (3*a^2*f*(e + f*x)^2*Poly
Log[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d
^2) + (3*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2
])])/(b*Sqrt[a^2 - b^2]*d^2) + (6*a*f^3*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a
 - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^4) + ((6*I)*a^2*f^2*(e + f*x)*PolyLo
g[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^3
) - ((6*I)*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b
^2])])/(b*Sqrt[a^2 - b^2]*d^3) + (6*a*f^3*PolyLog[3, (I*b*E^(I*(c + d*x)))/
(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^4) - ((6*I)*a^2*f^2*(e + f*x)*Poly
Log[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d
^3) + ((6*I)*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 -
 b^2])])/(b*Sqrt[a^2 - b^2]*d^3) - (6*a^2*f^3*PolyLog[4, (I*b*E^(I*(c + d*x
)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^4) + (6*f^3*PolyLog[4, (
I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^4) + (6*a
^2*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b
^2)^(3/2)*d^4) - (6*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^
2])])/(b*Sqrt[a^2 - b^2]*d^4) - (a*(e + f*x)^3*Cos[c + d*x])/((a^2 - b^2)*d
*(a + b*Sin[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
```

```
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
```

```
& PosQ[a^2 - b^2]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\sin(c+dx)}{(a+b\sin(c+dx))^2}\,dx = \int\left(-\frac{a(e+fx)^3}{b(a+b\sin(c+dx))^2}+\frac{(e+fx)^3}{b(a+b\sin(c+dx))}\right)dx$$

$$= \frac{\int \frac{(e+fx)^3}{a+b\sin(c+dx)}\,dx}{b} - \frac{a\int \frac{(e+fx)^3}{(a+b\sin(c+dx))^2}\,dx}{b}$$

$$= -\frac{a(e+fx)^3\cos(c+dx)}{\left(a^2-b^2\right)d(a+b\sin(c+dx))} + \frac{2\int \frac{e^{i(c+dx)}(e+fx)^3}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b} - \frac{a^2\int \frac{(e+fx)^3}{a+b\sin(c+dx)}\,dx}{b\left(a^2-b^2\right)}$$

$$= -\frac{ia(e+fx)^3}{b\left(a^2-b^2\right)d} - \frac{a(e+fx)^3\cos(c+dx)}{\left(a^2-b^2\right)d(a+b\sin(c+dx))} - \frac{\left(2a^2\right)\int \frac{e^{i(c+dx)}(e+fx)^3}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b\left(a^2-b^2\right)} -$$

$$= -\frac{ia(e+fx)^3}{b\left(a^2-b^2\right)d} + \frac{3af(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} - \frac{i(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d}$$

$$= -\frac{ia(e+fx)^3}{b\left(a^2-b^2\right)d} + \frac{3af(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} + \frac{ia^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d}$$

$$= -\frac{ia(e+fx)^3}{b\left(a^2-b^2\right)d} + \frac{3af(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} + \frac{ia^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d}$$

$$= -\frac{ia(e+fx)^3}{b\left(a^2-b^2\right)d} + \frac{3af(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} + \frac{ia^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d}$$

$$= -\frac{ia(e+fx)^3}{b\left(a^2-b^2\right)d} + \frac{3af(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} + \frac{ia^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d}$$

$$= -\frac{ia(e+fx)^3}{b\left(a^2-b^2\right)d} + \frac{3af(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} + \frac{ia^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d}$$

Mathematica [B] time = 22.32, size = 5446, normalized size = 3.60

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sin[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] Result too large to show
```

fricas [C] time = 1.00, size = 5200, normalized size = 3.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*(6*I*b^4*f^3*sin(d*x + c) + 6*I*a*b^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*po
lylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I
*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(-6*I*b^4*f^3*sin(d*x + c)
- 6*I*a*b^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x + c)
- 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2
)/b^2))/b) + 2*(-6*I*b^4*f^3*sin(d*x + c) - 6*I*a*b^3*f^3)*sqrt(-(a^2 - b^2
)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*
x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(6*I*b^4*f^3*sin(
d*x + c) + 6*I*a*b^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos
(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-
(a^2 - b^2)/b^2))/b) - 4*((a^3*b - a*b^3)*d^3*f^3*x^3 + 3*(a^3*b - a*b^3)*d
^3*e*f^2*x^2 + 3*(a^3*b - a*b^3)*d^3*e^2*f*x + (a^3*b - a*b^3)*d^3*e^3)*cos
(d*x + c) + (12*I*(a^4 - a^2*b^2)*d*f^3*x + 12*I*(a^4 - a^2*b^2)*d*e*f^2 +
(12*I*(a^3*b - a*b^3)*d*f^3*x + 12*I*(a^3*b - a*b^3)*d*e*f^2)*sin(d*x + c)
+ 2*(-3*I*a*b^3*d^2*f^3*x^2 - 6*I*a*b^3*d^2*e*f^2*x - 3*I*a*b^3*d^2*e^2*f +
 (-3*I*b^4*d^2*f^3*x^2 - 6*I*b^4*d^2*e*f^2*x - 3*I*b^4*d^2*e^2*f)*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
 c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
 + 1) + (12*I*(a^4 - a^2*b^2)*d*f^3*x + 12*I*(a^4 - a^2*b^2)*d*e*f^2 + (12*
I*(a^3*b - a*b^3)*d*f^3*x + 12*I*(a^3*b - a*b^3)*d*e*f^2)*sin(d*x + c) + 2*
(3*I*a*b^3*d^2*f^3*x^2 + 6*I*a*b^3*d^2*e*f^2*x + 3*I*a*b^3*d^2*e^2*f + (3*I
*b^4*d^2*f^3*x^2 + 6*I*b^4*d^2*e*f^2*x + 3*I*b^4*d^2*e^2*f)*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) -
2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)
+ (-12*I*(a^4 - a^2*b^2)*d*f^3*x - 12*I*(a^4 - a^2*b^2)*d*e*f^2 + (-12*I*(a
^3*b - a*b^3)*d*f^3*x - 12*I*(a^3*b - a*b^3)*d*e*f^2)*sin(d*x + c) + 2*(3*I
*a*b^3*d^2*f^3*x^2 + 6*I*a*b^3*d^2*e*f^2*x + 3*I*a*b^3*d^2*e^2*f + (3*I*b^4
*d^2*f^3*x^2 + 6*I*b^4*d^2*e*f^2*x + 3*I*b^4*d^2*e^2*f)*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2))*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(
b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (
-12*I*(a^4 - a^2*b^2)*d*f^3*x - 12*I*(a^4 - a^2*b^2)*d*e*f^2 + (-12*I*(a^3*
b - a*b^3)*d*f^3*x - 12*I*(a^3*b - a*b^3)*d*e*f^2)*sin(d*x + c) + 2*(-3*I*a
*b^3*d^2*f^3*x^2 - 6*I*a*b^3*d^2*e*f^2*x - 3*I*a*b^3*d^2*e^2*f + (-3*I*b^4*
d^2*f^3*x^2 - 6*I*b^4*d^2*e*f^2*x - 3*I*b^4*d^2*e^2*f)*sin(d*x + c))*sqrt(-
```

(a^2 - b^2)/b^2))*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b *cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2* (3*(a^4 - a^2*b^2)*d^2*e^2*f - 6*(a^4 - a^2*b^2)*c*d*e*f^2 + 3*(a^4 - a^2*b ^2)*c^2*f^3 + 3*((a^3*b - a*b^3)*d^2*e^2*f - 2*(a^3*b - a*b^3)*c*d*e*f^2 + (a^3*b - a*b^3)*c^2*f^3)*sin(d*x + c) - (a*b^3*d^3*e^3 - 3*a*b^3*c*d^2*e^2* f + 3*a*b^3*c^2*d*e*f^2 - a*b^3*c^3*f^3 + (b^4*d^3*e^3 - 3*b^4*c*d^2*e^2*f + 3*b^4*c^2*d*e*f^2 - b^4*c^3*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*lo g(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I* a) + 2*(3*(a^4 - a^2*b^2)*d^2*e^2*f - 6*(a^4 - a^2*b^2)*c*d*e*f^2 + 3*(a^4 - a^2*b^2)*c^2*f^3 + 3*((a^3*b - a*b^3)*d^2*e^2*f - 2*(a^3*b - a*b^3)*c*d*e *f^2 + (a^3*b - a*b^3)*c^2*f^3)*sin(d*x + c) - (a*b^3*d^3*e^3 - 3*a*b^3*c*d ^2*e^2*f + 3*a*b^3*c^2*d*e*f^2 - a*b^3*c^3*f^3 + (b^4*d^3*e^3 - 3*b^4*c*d^2 *e^2*f + 3*b^4*c^2*d*e*f^2 - b^4*c^3*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b ^2))*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(3*(a^4 - a^2*b^2)*d^2*e^2*f - 6*(a^4 - a^2*b^2)*c*d*e*f^2 + 3*(a^4 - a^2*b^2)*c^2*f^3 + 3*((a^3*b - a*b^3)*d^2*e^2*f - 2*(a^3*b - a*b^3)*c*d*e*f^2 + (a^3*b - a*b^3)*c^2*f^3)*sin(d*x + c) + (a*b^3*d^3*e^3 - 3*a* b^3*c*d^2*e^2*f + 3*a*b^3*c^2*d*e*f^2 - a*b^3*c^3*f^3 + (b^4*d^3*e^3 - 3*b^ 4*c*d^2*e^2*f + 3*b^4*c^2*d*e*f^2 - b^4*c^3*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b ^2)/b^2) + 2*I*a) + 2*(3*(a^4 - a^2*b^2)*d^2*e^2*f - 6*(a^4 - a^2*b^2)*c*d* e*f^2 + 3*(a^4 - a^2*b^2)*c^2*f^3 + 3*((a^3*b - a*b^3)*d^2*e^2*f - 2*(a^3*b - a*b^3)*c*d*e*f^2 + (a^3*b - a*b^3)*c^2*f^3)*sin(d*x + c) + (a*b^3*d^3*e^ 3 - 3*a*b^3*c*d^2*e^2*f + 3*a*b^3*c^2*d*e*f^2 - a*b^3*c^3*f^3 + (b^4*d^3*e^ 3 - 3*b^4*c*d^2*e^2*f + 3*b^4*c^2*d*e*f^2 - b^4*c^3*f^3)*sin(d*x + c))*sqrt (-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(- (a^2 - b^2)/b^2) - 2*I*a) + 2*(3*(a^4 - a^2*b^2)*d^2*f^3*x^2 + 6*(a^4 - a^2 *b^2)*d^2*e*f^2*x + 6*(a^4 - a^2*b^2)*c*d*e*f^2 - 3*(a^4 - a^2*b^2)*c^2*f^3 + 3*((a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(a^3*b - a*b^3)*d^2*e*f^2*x + 2*(a^3* b - a*b^3)*c*d*e*f^2 - (a^3*b - a*b^3)*c^2*f^3)*sin(d*x + c) - (a*b^3*d^3*f ^3*x^3 + 3*a*b^3*d^3*e*f^2*x^2 + 3*a*b^3*d^3*e^2*f*x + 3*a*b^3*c*d^2*e^2*f - 3*a*b^3*c^2*d*e*f^2 + a*b^3*c^3*f^3 + (b^4*d^3*f^3*x^3 + 3*b^4*d^3*e*f^2* x^2 + 3*b^4*d^3*e^2*f*x + 3*b^4*c*d^2*e^2*f - 3*b^4*c^2*d*e*f^2 + b^4*c^3*f ^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(2*I*a*cos(d*x + c) + 2*a *sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(3*(a^4 - a^2*b^2)*d^2*f^3*x^2 + 6*(a^4 - a^2*b^2)*d^2*e*f^ 2*x + 6*(a^4 - a^2*b^2)*c*d*e*f^2 - 3*(a^4 - a^2*b^2)*c^2*f^3 + 3*((a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(a^3*b - a*b^3)*d^2*e*f^2*x + 2*(a^3*b - a*b^3)*c*d *e*f^2 - (a^3*b - a*b^3)*c^2*f^3)*sin(d*x + c) + (a*b^3*d^3*f^3*x^3 + 3*a*b ^3*d^3*e*f^2*x^2 + 3*a*b^3*d^3*e^2*f*x + 3*a*b^3*c*d^2*e^2*f - 3*a*b^3*c^2* d*e*f^2 + a*b^3*c^3*f^3 + (b^4*d^3*f^3*x^3 + 3*b^4*d^3*e*f^2*x^2 + 3*b^4*d^ 3*e^2*f*x + 3*b^4*c*d^2*e^2*f - 3*b^4*c^2*d*e*f^2 + b^4*c^3*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(3*(a^4 - a^2*b^2)*d^2*f^3*x^2 + 6*(a^4 - a^2*b^2)*d^2*e*f^2*x + 6*(a^4 -

```
a^2*b^2)*c*d*e*f^2 - 3*(a^4 - a^2*b^2)*c^2*f^3 + 3*((a^3*b - a*b^3)*d^2*f^
3*x^2 + 2*(a^3*b - a*b^3)*d^2*e*f^2*x + 2*(a^3*b - a*b^3)*c*d*e*f^2 - (a^3*
b - a*b^3)*c^2*f^3)*sin(d*x + c) - (a*b^3*d^3*f^3*x^3 + 3*a*b^3*d^3*e*f^2*x
^2 + 3*a*b^3*d^3*e^2*f*x + 3*a*b^3*c*d^2*e^2*f - 3*a*b^3*c^2*d*e*f^2 + a*b^
3*c^3*f^3 + (b^4*d^3*f^3*x^3 + 3*b^4*d^3*e*f^2*x^2 + 3*b^4*d^3*e^2*f*x + 3*
b^4*c*d^2*e^2*f - 3*b^4*c^2*d*e*f^2 + b^4*c^3*f^3)*sin(d*x + c))*sqrt(-(a^2
 - b^2)/b^2))*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*
x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(3*(a^4 - a
^2*b^2)*d^2*f^3*x^2 + 6*(a^4 - a^2*b^2)*d^2*e*f^2*x + 6*(a^4 - a^2*b^2)*c*d
*e*f^2 - 3*(a^4 - a^2*b^2)*c^2*f^3 + 3*((a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(a^
3*b - a*b^3)*d^2*e*f^2*x + 2*(a^3*b - a*b^3)*c*d*e*f^2 - (a^3*b - a*b^3)*c^
2*f^3)*sin(d*x + c) + (a*b^3*d^3*f^3*x^3 + 3*a*b^3*d^3*e*f^2*x^2 + 3*a*b^3*
d^3*e^2*f*x + 3*a*b^3*c*d^2*e^2*f - 3*a*b^3*c^2*d*e*f^2 + a*b^3*c^3*f^3 + (
b^4*d^3*f^3*x^3 + 3*b^4*d^3*e*f^2*x^2 + 3*b^4*d^3*e^2*f*x + 3*b^4*c*d^2*e^2
*f - 3*b^4*c^2*d*e*f^2 + b^4*c^3*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))
*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*
sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 12*((a^3*b - a*b^3)*f^3*si
n(d*x + c) + (a^4 - a^2*b^2)*f^3 + (a*b^3*d*f^3*x + a*b^3*d*e*f^2 + (b^4*d*
f^3*x + b^4*d*e*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*polylog(3, 1/2*(
2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c
))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*((a^3*b - a*b^3)*f^3*sin(d*x + c) + (a^4
 - a^2*b^2)*f^3 - (a*b^3*d*f^3*x + a*b^3*d*e*f^2 + (b^4*d*f^3*x + b^4*d*e*f
^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*polylog(3, 1/2*(2*I*a*cos(d*x + c
) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b
^2)/b^2))/b) + 12*((a^3*b - a*b^3)*f^3*sin(d*x + c) + (a^4 - a^2*b^2)*f^3 +
 (a*b^3*d*f^3*x + a*b^3*d*e*f^2 + (b^4*d*f^3*x + b^4*d*e*f^2)*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2))*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x
+ c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 1
2*((a^3*b - a*b^3)*f^3*sin(d*x + c) + (a^4 - a^2*b^2)*f^3 - (a*b^3*d*f^3*x
+ a*b^3*d*e*f^2 + (b^4*d*f^3*x + b^4*d*e*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^
2)/b^2))*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(
d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b))/((a^4*b^2 - 2*a^2*
b^4 + b^6)*d^4*sin(d*x + c) + (a^5*b - 2*a^3*b^3 + a*b^5)*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sin\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sin(d*x + c)/(b*sin(d*x + c) + a)^2, x)
```

maple [F] time = 3.01, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \sin \left(dx+c\right)}{\left(a+b\sin \left(dx+c\right)\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c))^2,x)
```

```
[Out] int((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c))^2,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x))^2,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sin(d*x+c)/(a+b*sin(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.248 $\int \frac{(e+fx)\sin(c+dx)}{(a+b\sin(c+dx))^3}\,dx$

Optimal. Leaf size=751

$$-\frac{3afLi_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{2bd^2\left(a^2-b^2\right)^{3/2}}+\frac{3afLi_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{2bd^2\left(a^2-b^2\right)^{3/2}}-\frac{af}{2bd^2\left(a^2-b^2\right)(a+b\sin(c+dx))}+\frac{3a^2f\log(a+b\sin(c+dx))}{2bd^2\left(a^2-b^2\right)^2}-\frac{f\log(}{b}$$

```
[Out] 3/2*a^2*f*ln(a+b*sin(d*x+c))/b/(a^2-b^2)^2/d^2-f*ln(a+b*sin(d*x+c))/b/(a^2-
b^2)/d^2+3/2*I*a^3*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(
a^2-b^2)^(5/2)/d-3/2*I*a*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)
))/b/(a^2-b^2)^(3/2)/d-3/2*I*a^3*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^
2)^(1/2)))/b/(a^2-b^2)^(5/2)/d+3/2*I*a*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(
a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d+3/2*a^3*f*polylog(2,I*b*exp(I*(d*x+c))
/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/d^2-3/2*a*f*polylog(2,I*b*exp(I*(d*
x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2-3/2*a^3*f*polylog(2,I*b*ex
p(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/d^2+3/2*a*f*polylog(2,I
*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2-1/2*a*(f*x+e)*
cos(d*x+c)/(a^2-b^2)/d/(a+b*sin(d*x+c))^2-1/2*a*f/b/(a^2-b^2)/d^2/(a+b*sin(
d*x+c))-3/2*a^2*(f*x+e)*cos(d*x+c)/(a^2-b^2)^2/d/(a+b*sin(d*x+c))+(f*x+e)*c
os(d*x+c)/(a^2-b^2)/d/(a+b*sin(d*x+c))
```

Rubi [A] time = 2.96, antiderivative size = 751, normalized size of antiderivative = 1.00, number of steps used = 48, number of rules used = 11, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.458, Rules used = {6742, 3325, 3324, 3323, 2264, 2190, 2279, 2391, 2668, 31, 32}

$$\frac{3a^3f\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{2bd^2\left(a^2-b^2\right)^{5/2}}-\frac{3a^3f\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{2bd^2\left(a^2-b^2\right)^{5/2}}-\frac{3af\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{2bd^2\left(a^2-b^2\right)^{3/2}}+\frac{3af\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{2bd^2\left(a^2-b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sin[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] (((3*I)/2)*a^3*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2]
)])/(b*(a^2 - b^2)^(5/2)*d) - (((3*I)/2)*a*(e + f*x)*Log[1 - (I*b*E^(I*(c +
 d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d) - (((3*I)/2)*a^3*(e
 + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2
)^(5/2)*d) + (((3*I)/2)*a*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt
[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d) + (3*a^2*f*Log[a + b*Sin[c + d*x]])/
(2*b*(a^2 - b^2)^2*d^2) - (f*Log[a + b*Sin[c + d*x]])/(b*(a^2 - b^2)*d^2) +
 (3*a^3*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(2*b*(a^
2 - b^2)^(5/2)*d^2) - (3*a*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2
```

```
 - b^2])])/(2*b*(a^2 - b^2)^(3/2)*d^2) - (3*a^3*f*PolyLog[2, (I*b*E^(I*(c +
 d*x)))/(a + Sqrt[a^2 - b^2])])/(2*b*(a^2 - b^2)^(5/2)*d^2) + (3*a*f*PolyLo
g[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(2*b*(a^2 - b^2)^(3/2)*d
^2) - (a*(e + f*x)*Cos[c + d*x])/(2*(a^2 - b^2)*d*(a + b*Sin[c + d*x])^2) -
 (a*f)/(2*b*(a^2 - b^2)*d^2*(a + b*Sin[c + d*x])) - (3*a^2*(e + f*x)*Cos[c
+ d*x])/(2*(a^2 - b^2)^2*d*(a + b*Sin[c + d*x])) + ((e + f*x)*Cos[c + d*x])
/((a^2 - b^2)*d*(a + b*Sin[c + d*x]))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3325

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> -Simp[(b*(c + d*x)^m*Cos[e + f*x]*(a + b*Sin[e + f*x])^(n + 1
))/(f*(n + 1)*(a^2 - b^2)), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m*(a +
b*Sin[e + f*x])^(n + 1), x], x] - Dist[(b*(n + 2))/((n + 1)*(a^2 - b^2)), I
nt[(c + d*x)^m*Sin[e + f*x]*(a + b*Sin[e + f*x])^(n + 1), x], x] + Dist[(b*
d*m)/(f*(n + 1)*(a^2 - b^2)), Int[(c + d*x)^(m - 1)*Cos[e + f*x]*(a + b*Sin
[e + f*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && ILtQ[n, -2] && IGtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\sin(c+dx)}{(a+b\sin(c+dx))^3}\,dx = \int \left(-\frac{a(e+fx)}{b(a+b\sin(c+dx))^3}+\frac{e+fx}{b(a+b\sin(c+dx))^2}\right)dx$$

$$= \frac{\int \frac{e+fx}{(a+b\sin(c+dx))^2}\,dx}{b} - \frac{a\int \frac{e+fx}{(a+b\sin(c+dx))^3}\,dx}{b}$$

$$= -\frac{a(e+fx)\cos(c+dx)}{2\left(a^2-b^2\right)d(a+b\sin(c+dx))^2} + \frac{(e+fx)\cos(c+dx)}{\left(a^2-b^2\right)d(a+b\sin(c+dx))} + \frac{a\int \frac{(e+fx)\sin(c}{(a+b\sin(c+}}{2\left(a^2-b\right.}$$

$$= -\frac{a(e+fx)\cos(c+dx)}{2\left(a^2-b^2\right)d(a+b\sin(c+dx))^2} - \frac{a^2(e+fx)\cos(c+dx)}{\left(a^2-b^2\right)^2 d(a+b\sin(c+dx))} + \frac{(e+fx)}{\left(a^2-b^2\right)d(a}$$

$$= -\frac{f\log(a+b\sin(c+dx))}{b\left(a^2-b^2\right)d^2} - \frac{a(e+fx)\cos(c+dx)}{2\left(a^2-b^2\right)d(a+b\sin(c+dx))^2} - \frac{af}{2b\left(a^2-b^2\right)d^2(a+}$$

$$= -\frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d} + \frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d} + \frac{a^2f\log(a+b\sin}{b\left(a^2-b^2\right)}$$

$$= \frac{ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{5/2}d} - \frac{ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d} - \frac{ia^3(e+fx)\log\left(1\right.}{b\left(a^2-b^2\right.}$$

$$= \frac{ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{5/2}d} - \frac{3ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{2b\left(a^2-b^2\right)^{3/2}d} - \frac{ia^3(e+fx)\log\left(\right.}{b\left(a^2-b\right.}$$

$$= \frac{3ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{2b\left(a^2-b^2\right)^{5/2}d} - \frac{3ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{2b\left(a^2-b^2\right)^{3/2}d} - \frac{3ia^3(e+fx)\log}{2b\left(a^2\right.}$$

$$= \frac{3ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{2b\left(a^2-b^2\right)^{5/2}d} - \frac{3ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{2b\left(a^2-b^2\right)^{3/2}d} - \frac{3ia^3(e+fx)\log}{2b\left(a^2\right.}$$

$$= \frac{3ia^3(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{2b\left(a^2-b^2\right)^{5/2}d} - \frac{3ia(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{2b\left(a^2-b^2\right)^{3/2}d} - \frac{3ia^3(e+fx)\log}{2b\left(a^2\right.}$$

Mathematica [B] time = 16.00, size = 2408, normalized size = 3.21

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Sin[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] (-(a*d*e*Cos[c + d*x]) + a*c*f*Cos[c + d*x] - a*f*(c + d*x)*Cos[c + d*x])/(
2*(a - b)*(a + b)*d^2*(a + b*Sin[c + d*x])^2) + (-(a^3*f) + a*b^2*f - a^2*b
*d*e*Cos[c + d*x] - 2*b^3*d*e*Cos[c + d*x] + a^2*b*c*f*Cos[c + d*x] + 2*b^3
*c*f*Cos[c + d*x] - a^2*b*f*(c + d*x)*Cos[c + d*x] - 2*b^3*f*(c + d*x)*Cos[
c + d*x])/(2*(a - b)^2*b*(a + b)^2*d^2*(a + b*Sin[c + d*x])) + (((-2*(a^2 +
 2*b^2)*f*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2]
 + (2*(a^2*f + 2*b^2*f + a*b*(-3*d*e + 3*c*f))*ArcTan[(b + a*Tan[(c + d*x)/
2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] - ((a^2 + 2*b^2)*f*Log[Sec[(c + d*x)/
2]^2])/b + ((a^2 + 2*b^2)*f*Log[Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])])/b
 + ((3*I)*a*b*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*
Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 - I*T
an[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] - ((3*
I)*a*b*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c
+ d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 + I*Tan[(c + d*
x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] - ((3*I)*a*b*f*(
Log[1 - I*Tan[(c + d*x)/2]]*Log[-((b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2
])/(I*a - b + Sqrt[-a^2 + b^2]))] + PolyLog[2, (a*(I + Tan[(c + d*x)/2]))/(
I*a - b + Sqrt[-a^2 + b^2])]))/Sqrt[-a^2 + b^2] + ((3*I)*a*b*f*(Log[1 + I*T
an[(c + d*x)/2]]*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b -
 Sqrt[-a^2 + b^2])] + PolyLog[2, (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sq
rt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2])*((-3*a*b*e)/(2*(a^2 - b^2)^2*(a + b*S
in[c + d*x])) + (3*a*b*c*f)/(2*(a^2 - b^2)^2*d*(a + b*Sin[c + d*x])) - (3*a
*b*f*(c + d*x))/(2*(a^2 - b^2)^2*d*(a + b*Sin[c + d*x])) + (a^2*f*Cos[c + d
*x])/(2*(a^2 - b^2)^2*d*(a + b*Sin[c + d*x])) + (b^2*f*Cos[c + d*x])/((a^2
- b^2)^2*d*(a + b*Sin[c + d*x]))))/(d*(-(((a^2 + 2*b^2)*f*Tan[(c + d*x)/2])
/b) + ((a^2 + 2*b^2)*f*Cos[(c + d*x)/2]^2*(b*Cos[c + d*x]*Sec[(c + d*x)/2]^
2 + Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c + d*x)/2]))/(b*(a + b*Si
n[c + d*x])) - (a*(a^2 + 2*b^2)*f*Sec[(c + d*x)/2]^2)/((a^2 - b^2)*(1 + (b
+ a*Tan[(c + d*x)/2])^2/(a^2 - b^2))) + (a*(a^2*f + 2*b^2*f + a*b*(-3*d*e +
 3*c*f))*Sec[(c + d*x)/2]^2)/((a^2 - b^2)*(1 + (b + a*Tan[(c + d*x)/2])^2/(
a^2 - b^2))) - ((3*I)*a*b*f*(((-1/2*I)*Log[-((b - Sqrt[-a^2 + b^2] + a*Tan[
(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 - I*Tan
[(c + d*x)/2]) - (Log[1 - (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 +
 b^2])]*Sec[(c + d*x)/2]^2)/(2*(I + Tan[(c + d*x)/2])) + (a*Log[1 - I*Tan[(
c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(2*(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)
/2]))))/Sqrt[-a^2 + b^2] + ((3*I)*a*b*f*(((I/2)*Log[(b - Sqrt[-a^2 + b^2] +
 a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 +
```

```
 I*Tan[(c + d*x)/2]) - ((I/2)*a*Log[1 - (a + I*a*Tan[(c + d*x)/2])/(a + I*(
-b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(a + I*a*Tan[(c + d*x)/2]) + (
a*Log[1 + I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(2*(b - Sqrt[-a^2 + b^2]
+ a*Tan[(c + d*x)/2]))))/Sqrt[-a^2 + b^2] + ((3*I)*a*b*f*(((I/2)*Log[1 - (a
*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]
^2)/(1 - I*Tan[(c + d*x)/2]) - ((I/2)*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c
+ d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[
(c + d*x)/2]) + (a*Log[1 - I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(2*(b +
Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]))))/Sqrt[-a^2 + b^2] - ((3*I)*a*b*f*(
((-1/2*I)*Log[1 - (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]
))]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) + ((I/2)*Log[(b + Sqrt[-a^
2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/
2]^2)/(1 + I*Tan[(c + d*x)/2]) + (a*Log[1 + I*Tan[(c + d*x)/2]]*Sec[(c + d*
x)/2]^2)/(2*(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]))))/Sqrt[-a^2 + b^2]
))
```

fricas [B] time = 0.82, size = 2429, normalized size = 3.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/4*((-3*I*a*b^5*f*cos(d*x + c)^2 + 6*I*a^2*b^4*f*sin(d*x + c) + 3*I*(a^3*b
^3 + a*b^5)*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*
sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
 + 2*b)/b + 1) + (3*I*a*b^5*f*cos(d*x + c)^2 - 6*I*a^2*b^4*f*sin(d*x + c) -
 3*I*(a^3*b^3 + a*b^5)*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x
+ c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2
- b^2)/b^2) + 2*b)/b + 1) + (3*I*a*b^5*f*cos(d*x + c)^2 - 6*I*a^2*b^4*f*sin
(d*x + c) - 3*I*(a^3*b^3 + a*b^5)*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*
I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-3*I*a*b^5*f*cos(d*x + c)^2 + 6*I*
a^2*b^4*f*sin(d*x + c) + 3*I*(a^3*b^3 + a*b^5)*f)*sqrt(-(a^2 - b^2)/b^2)*di
log(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*
sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 3*((a^3*b^3 + a*b^5)*d
*f*x + (a^3*b^3 + a*b^5)*c*f - (a*b^5*d*f*x + a*b^5*c*f)*cos(d*x + c)^2 + 2
*(a^2*b^4*d*f*x + a^2*b^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2
*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 3*((a^3*b^3 + a*b^5)*d*f*x + (a^3*b
^3 + a*b^5)*c*f - (a*b^5*d*f*x + a*b^5*c*f)*cos(d*x + c)^2 + 2*(a^2*b^4*d*f
*x + a^2*b^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d
*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2) + 2*b)/b) + 3*((a^3*b^3 + a*b^5)*d*f*x + (a^3*b^3 + a*b^5)*c
*f - (a*b^5*d*f*x + a*b^5*c*f)*cos(d*x + c)^2 + 2*(a^2*b^4*d*f*x + a^2*b^4*
```

```
c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*
a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2) + 2*b)/b) - 3*((a^3*b^3 + a*b^5)*d*f*x + (a^3*b^3 + a*b^5)*c*f - (a*b^5*
d*f*x + a*b^5*c*f)*cos(d*x + c)^2 + 2*(a^2*b^4*d*f*x + a^2*b^4*c*f)*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x +
c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)
 + 2*(a^6 - 2*a^4*b^2 + a^2*b^4)*f + 2*((2*a^5*b - a^3*b^3 - a*b^5)*d*f*x +
 (2*a^5*b - a^3*b^3 - a*b^5)*d*e)*cos(d*x + c) + ((a^4*b^2 + a^2*b^4 - 2*b^
6)*f*cos(d*x + c)^2 - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*f*sin(d*x + c) - (a^6 +
 2*a^4*b^2 - a^2*b^4 - 2*b^6)*f + 3*((a^3*b^3 + a*b^5)*d*e - (a^3*b^3 + a*b
^5)*c*f - (a*b^5*d*e - a*b^5*c*f)*cos(d*x + c)^2 + 2*(a^2*b^4*d*e - a^2*b^4
*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(d*x + c) + 2*I*b*si
n(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + ((a^4*b^2 + a^2*b^4 - 2*
b^6)*f*cos(d*x + c)^2 - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*f*sin(d*x + c) - (a^6
 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*f + 3*((a^3*b^3 + a*b^5)*d*e - (a^3*b^3 + a
*b^5)*c*f - (a*b^5*d*e - a*b^5*c*f)*cos(d*x + c)^2 + 2*(a^2*b^4*d*e - a^2*b
^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(d*x + c) - 2*I*b*
sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + ((a^4*b^2 + a^2*b^4 -
2*b^6)*f*cos(d*x + c)^2 - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*f*sin(d*x + c) - (a
^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*f - 3*((a^3*b^3 + a*b^5)*d*e - (a^3*b^3 +
 a*b^5)*c*f - (a*b^5*d*e - a*b^5*c*f)*cos(d*x + c)^2 + 2*(a^2*b^4*d*e - a^2
*b^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) + 2*I
*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + ((a^4*b^2 + a^2*b^4
 - 2*b^6)*f*cos(d*x + c)^2 - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*f*sin(d*x + c) -
 (a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*f - 3*((a^3*b^3 + a*b^5)*d*e - (a^3*b^
3 + a*b^5)*c*f - (a*b^5*d*e - a*b^5*c*f)*cos(d*x + c)^2 + 2*(a^2*b^4*d*e -
a^2*b^4*c*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) -
2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*((a^5*b - 2*a^
3*b^3 + a*b^5)*f + ((a^4*b^2 + a^2*b^4 - 2*b^6)*d*f*x + (a^4*b^2 + a^2*b^4
- 2*b^6)*d*e)*cos(d*x + c))*sin(d*x + c))/((a^6*b^3 - 3*a^4*b^5 + 3*a^2*b^7
 - b^9)*d^2*cos(d*x + c)^2 - 2*(a^7*b^2 - 3*a^5*b^4 + 3*a^3*b^6 - a*b^8)*d^
2*sin(d*x + c) - (a^8*b - 2*a^6*b^3 + 2*a^2*b^7 - b^9)*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\sin(dx+c)}{(b\sin(dx+c)+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sin(d*x + c)/(b*sin(d*x + c) + a)^3, x)
```

maple [A] time = 2.64, size = 1084, normalized size = 1.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c))^3,x)
```

```
[Out] I*(4*I*b*a^3*d*e*exp(I*(d*x+c))-3*I*b^3*a*d*f*x*exp(3*I*(d*x+c))-3*I*b^3*a*
d*e*exp(3*I*(d*x+c))+5*I*b^3*a*d*f*x*exp(I*(d*x+c))+2*a^4*d*f*x*exp(2*I*(d*
x+c))+5*b^2*d*f*x*exp(2*I*(d*x+c))*a^2+2*b^4*d*f*x*exp(2*I*(d*x+c))+4*I*b*a
^3*d*f*x*exp(I*(d*x+c))+5*I*b^3*a*d*e*exp(I*(d*x+c))-2*I*b^2*f*exp(2*I*(d*x
+c))*a^2+2*I*a^4*f*exp(2*I*(d*x+c))+2*a^4*d*e*exp(2*I*(d*x+c))+b*a^3*f*exp(
3*I*(d*x+c))+5*b^2*d*e*exp(2*I*(d*x+c))*a^2-b^3*a*f*exp(3*I*(d*x+c))+2*b^4*
d*e*exp(2*I*(d*x+c))-a^2*b^2*d*f*x-2*b^4*d*f*x-b*a^3*f*exp(I*(d*x+c))-a^2*b
^2*d*e+b^3*a*f*exp(I*(d*x+c))-2*b^4*d*e)/(I*b+2*a*exp(I*(d*x+c))-I*b*exp(2*
I*(d*x+c)))^2/(a^2-b^2)^2/d^2/b+1/2/b/d^2/(-a^2+b^2)^2*a^2*f*ln(I*b*exp(2*I
*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)-1/b/d^2/(-a^2+b^2)^2*a^2*f*ln(exp(I*(d*x+
c)))+b/d^2/(-a^2+b^2)^2*f*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)-2
*b/d^2/(-a^2+b^2)^2*f*ln(exp(I*(d*x+c)))-3*I*b/d/(-a^2+b^2)^(5/2)*a*e*arcta
n(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))+3/2*b/d/(-a^2+b^2)^(5/2)
*a*f*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x+3
/2*b/d^2/(-a^2+b^2)^(5/2)*a*f*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I
*a+(-a^2+b^2)^(1/2)))*c+3/2*I*b/d^2/(-a^2+b^2)^(5/2)*a*f*dilog((I*a+b*exp(I
*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))-3/2*I*b/d^2/(-a^2+b^2)^
(5/2)*a*f*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/
2)))-3/2*b/d/(-a^2+b^2)^(5/2)*a*f*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2)
)/(I*a-(-a^2+b^2)^(1/2)))*x-3/2*b/d^2/(-a^2+b^2)^(5/2)*a*f*ln((I*a+b*exp(I*
(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c+3*I*b/d^2/(-a^2+b^2)^(
5/2)*a*f*c*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x))/(a + b*sin(c + d*x))^3,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sin(d*x+c)/(a+b*sin(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.249 $\int \frac{(e+fx)^2 \sin(c+dx)}{(a+b\sin(c+dx))^3} dx$

Optimal. Leaf size=1584

$$\frac{3i(e+fx)^2 \log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)a^3}{2b\left(a^2-b^2\right)^{5/2}d}-\frac{3i(e+fx)^2 \log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)a^3}{2b\left(a^2-b^2\right)^{5/2}d}+\frac{3f(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)a^3}{b\left(a^2-b^2\right)^{5/2}d^2}-\frac{3f(e+fx)\text{L}}{b\left(a^2\right.}$$

```
[Out] 3/2*I*a^3*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2
)^(5/2)/d+3/2*I*a*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/
(a^2-b^2)^(3/2)/d+3*I*a^3*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/
2)))/b/(a^2-b^2)^(5/2)/d^3+3*I*a*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b
^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^3+3*a^2*f*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(
a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^2/d^2+3*a^2*f*(f*x+e)*ln(1-I*b*exp(I*(d*x+c
))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^2/d^2+3*a^3*f*(f*x+e)*polylog(2,I*b*exp
(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/d^2-3*a*f*(f*x+e)*polylo
g(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2-3*a^3*f*(
f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/
d^2+3*a*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-
b^2)^(3/2)/d^2-3/2*I*a*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)
))/b/(a^2-b^2)^(3/2)/d-3/2*I*a^3*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-
b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/d-3*I*a^2*f^2*polylog(2,I*b*exp(I*(d*x+c))/(
a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^2/d^3-3*I*a^2*f^2*polylog(2,I*b*exp(I*(d*x+
c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^2/d^3-3*I*a*f^2*polylog(3,I*b*exp(I*(d
*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^3-3*I*a^3*f^2*polylog(3,I*b
*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/d^3+2*I*f^2*polylog(
2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^3+2*I*f^2*polylog(2
,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^3+2*a*f^2*arctan((b+
a*tan(1/2*d*x+1/2*c))/(a^2-b^2)^(1/2))/b/(a^2-b^2)^(3/2)/d^3-2*f*(f*x+e)*ln
(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^2-2*f*(f*x+e)*ln(1
-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^2+I*(f*x+e)^2/b/(a^2
-b^2)/d+(f*x+e)^2*cos(d*x+c)/(a^2-b^2)/d/(a+b*sin(d*x+c))-a*f*(f*x+e)/b/(a^
2-b^2)/d^2/(a+b*sin(d*x+c))-1/2*a*(f*x+e)^2*cos(d*x+c)/(a^2-b^2)/d/(a+b*sin
(d*x+c))^2-3/2*a^2*(f*x+e)^2*cos(d*x+c)/(a^2-b^2)^2/d/(a+b*sin(d*x+c))-3/2*
I*a^2*(f*x+e)^2/b/(a^2-b^2)^2/d
```

Rubi [A] time = 5.94, antiderivative size = 1584, normalized size of antiderivative = 1.00, number of steps used = 73, number of rules used = 16, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.615$, Rules used = {6742, 3325, 3324, 3323, 2264, 2190, 2531, 2282, 6589, 4519, 2279, 2391, 4422, 2660, 618, 204}

$$\frac{3i(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)a^3}{2b\left(a^2-b^2\right)^{5/2}d}-\frac{3i(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)a^3}{2b\left(a^2-b^2\right)^{5/2}d}+\frac{3f(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)a^3}{b\left(a^2-b^2\right)^{5/2}d^2}-\frac{3f(e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sin[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] (((-3*I)/2)*a^2*(e + f*x)^2)/(b*(a^2 - b^2)^2*d) + (I*(e + f*x)^2)/(b*(a^2
 - b^2)*d) + (2*a*f^2*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/(b*(
a^2 - b^2)^(3/2)*d^3) + (3*a^2*f*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a
 - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^2*d^2) - (2*f*(e + f*x)*Log[1 - (I*b*E
^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^2) + (((3*I)/2)*a^
3*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2
 - b^2)^(5/2)*d) - (((3*I)/2)*a*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(
a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d) + (3*a^2*f*(e + f*x)*Log[1 -
 (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^2*d^2) - (2*f
*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 -
b^2)*d^2) - (((3*I)/2)*a^3*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + S
qrt[a^2 - b^2])])/(b*(a^2 - b^2)^(5/2)*d) + (((3*I)/2)*a*(e + f*x)^2*Log[1
- (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d) - (
(3*I)*a^2*f^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(
a^2 - b^2)^2*d^3) + ((2*I)*f^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a
^2 - b^2])])/(b*(a^2 - b^2)*d^3) + (3*a^3*f*(e + f*x)*PolyLog[2, (I*b*E^(I*
(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(5/2)*d^2) - (3*a*f*(e +
 f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^
2)^(3/2)*d^2) - ((3*I)*a^2*f^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a
^2 - b^2])])/(b*(a^2 - b^2)^2*d^3) + ((2*I)*f^2*PolyLog[2, (I*b*E^(I*(c + d
*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^3) - (3*a^3*f*(e + f*x)*Poly
Log[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(5/2)*d
^2) + (3*a*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2
])])/(b*(a^2 - b^2)^(3/2)*d^2) + ((3*I)*a^3*f^2*PolyLog[3, (I*b*E^(I*(c + d
*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(5/2)*d^3) - ((3*I)*a*f^2*Poly
Log[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d
^3) - ((3*I)*a^3*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])
])/(b*(a^2 - b^2)^(5/2)*d^3) + ((3*I)*a*f^2*PolyLog[3, (I*b*E^(I*(c + d*x))
)/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^3) - (a*(e + f*x)^2*Cos[c
+ d*x])/(2*(a^2 - b^2)*d*(a + b*Sin[c + d*x])^2) - (a*f*(e + f*x))/(b*(a^2
- b^2)*d^2*(a + b*Sin[c + d*x])) - (3*a^2*(e + f*x)^2*Cos[c + d*x])/(2*(a^2
 - b^2)^2*d*(a + b*Sin[c + d*x])) + ((e + f*x)^2*Cos[c + d*x])/((a^2 - b^2)
*d*(a + b*Sin[c + d*x]))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3325

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> -Simp[(b*(c + d*x)^m*Cos[e + f*x]*(a + b*Sin[e + f*x])^(n + 1
))/(f*(n + 1)*(a^2 - b^2)), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m*(a +
b*Sin[e + f*x])^(n + 1), x], x] - Dist[(b*(n + 2))/((n + 1)*(a^2 - b^2)), I
nt[(c + d*x)^m*Sin[e + f*x]*(a + b*Sin[e + f*x])^(n + 1), x], x] + Dist[(b*
d*m)/(f*(n + 1)*(a^2 - b^2)), Int[(c + d*x)^(m - 1)*Cos[e + f*x]*(a + b*Sin
[e + f*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && ILtQ[n, -2] && IGtQ[m, 0]
```

Rule 4422

```
Int[Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sin[(c
```

```
_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sin[c + d*x
])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^(m
- 1)*(a + b*Sin[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x
] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2\sin(c+dx)}{(a+b\sin(c+dx))^3}\,dx = \int \left(-\frac{a(e+fx)^2}{b(a+b\sin(c+dx))^3} + \frac{(e+fx)^2}{b(a+b\sin(c+dx))^2}\right) dx$$

$$= \frac{\int \frac{(e+fx)^2}{(a+b\sin(c+dx))^2}\,dx}{b} - \frac{a\int \frac{(e+fx)^2}{(a+b\sin(c+dx))^3}\,dx}{b}$$

$$= -\frac{a(e+fx)^2\cos(c+dx)}{2\left(a^2-b^2\right)d(a+b\sin(c+dx))^2} + \frac{(e+fx)^2\cos(c+dx)}{\left(a^2-b^2\right)d(a+b\sin(c+dx))} + \frac{a\int \frac{(e+fx)^2\sin(c}{(a+b\sin(c+d}}{2\left(a^2-b\right.}$$

$$= \frac{i(e+fx)^2}{b\left(a^2-b^2\right)d} - \frac{a(e+fx)^2\cos(c+dx)}{2\left(a^2-b^2\right)d(a+b\sin(c+dx))^2} - \frac{af(e+fx)}{b\left(a^2-b^2\right)d^2(a+b\sin(c+dx))}$$

$$= -\frac{ia^2(e+fx)^2}{b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^2}{b\left(a^2-b^2\right)d} - \frac{2f(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} - \frac{2f(e+fx)\log\left(1\right.}{b\left(a^2-b\right.}$$

$$= -\frac{ia^2(e+fx)^2}{b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2a^2f(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^2 d^2} - \frac{2f(e+fx)\log}{b\left(a^2\right.}$$

$$= -\frac{3ia^2(e+fx)^2}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af^2\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2} d^3} + \frac{2a^2f(e+fx)\log}{b\left(a^2-b\right.}$$

$$= -\frac{3ia^2(e+fx)^2}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af^2\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2} d^3} + \frac{3a^2f(e+fx)\log}{b\left(a^2-b\right.}$$

$$= -\frac{3ia^2(e+fx)^2}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af^2\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2} d^3} + \frac{3a^2f(e+fx)\log}{b\left(a^2-b\right.}$$

$$= -\frac{3ia^2(e+fx)^2}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af^2\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2} d^3} + \frac{3a^2f(e+fx)\log}{b\left(a^2-b\right.}$$

$$= -\frac{3ia^2(e+fx)^2}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af^2\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2} d^3} + \frac{3a^2f(e+fx)\log}{b\left(a^2-b\right.}$$

$$= -\frac{3ia^2(e+fx)^2}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^2}{b\left(a^2-b^2\right)d} + \frac{2af^2\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2} d^3} + \frac{3a^2f(e+fx)\log}{b\left(a^2-b\right.}$$

Mathematica [B] time = 26.00, size = 13567, normalized size = 8.57

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sin[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] Result too large to show
```

fricas [C] time = 1.11, size = 5761, normalized size = 3.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/8*(8*(a^6 - 2*a^4*b^2 + a^2*b^4)*d*f^2*x + 8*(a^6 - 2*a^4*b^2 + a^2*b^4)*
d*e*f + 12*(a*b^5*f^2*cos(d*x + c)^2 - 2*a^2*b^4*f^2*sin(d*x + c) - (a^3*b^
3 + a*b^5)*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) -
 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2))/b) - 12*(a*b^5*f^2*cos(d*x + c)^2 - 2*a^2*b^4*f^2*sin(d*x + c) - (a^
3*b^3 + a*b^5)*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x +
c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
b^2)/b^2))/b) + 12*(a*b^5*f^2*cos(d*x + c)^2 - 2*a^2*b^4*f^2*sin(d*x + c) -
 (a^3*b^3 + a*b^5)*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d
*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2))/b) - 12*(a*b^5*f^2*cos(d*x + c)^2 - 2*a^2*b^4*f^2*sin(d*x +
 c) - (a^3*b^3 + a*b^5)*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*
cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2))/b) + 4*((2*a^5*b - a^3*b^3 - a*b^5)*d^2*f^2*x^2 + 2*(2
*a^5*b - a^3*b^3 - a*b^5)*d^2*e*f*x + (2*a^5*b - a^3*b^3 - a*b^5)*d^2*e^2)*
cos(d*x + c) + (4*I*(a^4*b^2 + a^2*b^4 - 2*b^6)*f^2*cos(d*x + c)^2 - 8*I*(a
^5*b + a^3*b^3 - 2*a*b^5)*f^2*sin(d*x + c) - 4*I*(a^6 + 2*a^4*b^2 - a^2*b^4
 - 2*b^6)*f^2 + 2*(6*I*(a^3*b^3 + a*b^5)*d*f^2*x + 6*I*(a^3*b^3 + a*b^5)*d*
e*f + (-6*I*a*b^5*d*f^2*x - 6*I*a*b^5*d*e*f)*cos(d*x + c)^2 + (12*I*a^2*b^4
*d*f^2*x + 12*I*a^2*b^4*d*e*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*dilog(
-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (4*I*(a^4*b^2 + a^2*b^4 - 2
*b^6)*f^2*cos(d*x + c)^2 - 8*I*(a^5*b + a^3*b^3 - 2*a*b^5)*f^2*sin(d*x + c)
 - 4*I*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*f^2 + 2*(-6*I*(a^3*b^3 + a*b^5)*
d*f^2*x - 6*I*(a^3*b^3 + a*b^5)*d*e*f + (6*I*a*b^5*d*f^2*x + 6*I*a*b^5*d*e*
f)*cos(d*x + c)^2 + (-12*I*a^2*b^4*d*f^2*x - 12*I*a^2*b^4*d*e*f)*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
```

```
+ 1) + (-4*I*(a^4*b^2 + a^2*b^4 - 2*b^6)*f^2*cos(d*x + c)^2 + 8*I*(a^5*b +
a^3*b^3 - 2*a*b^5)*f^2*sin(d*x + c) + 4*I*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^
6)*f^2 + 2*(-6*I*(a^3*b^3 + a*b^5)*d*f^2*x - 6*I*(a^3*b^3 + a*b^5)*d*e*f +
(6*I*a*b^5*d*f^2*x + 6*I*a*b^5*d*e*f)*cos(d*x + c)^2 + (-12*I*a^2*b^4*d*f^2
*x - 12*I*a^2*b^4*d*e*f)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(
-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-4*I*(a^4*b^2 + a^2*b^4 - 2*b^6
)*f^2*cos(d*x + c)^2 + 8*I*(a^5*b + a^3*b^3 - 2*a*b^5)*f^2*sin(d*x + c) + 4
*I*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*f^2 + 2*(6*I*(a^3*b^3 + a*b^5)*d*f^2
*x + 6*I*(a^3*b^3 + a*b^5)*d*e*f + (-6*I*a*b^5*d*f^2*x - 6*I*a*b^5*d*e*f)*c
os(d*x + c)^2 + (12*I*a^2*b^4*d*f^2*x + 12*I*a^2*b^4*d*e*f)*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) -
 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)
 - 2*(2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e*f - 2*(a^6 + 2*a^4*b^2 - a^
2*b^4 - 2*b^6)*c*f^2 - 2*((a^4*b^2 + a^2*b^4 - 2*b^6)*d*e*f - (a^4*b^2 + a^
2*b^4 - 2*b^6)*c*f^2)*cos(d*x + c)^2 + 4*((a^5*b + a^3*b^3 - 2*a*b^5)*d*e*f
 - (a^5*b + a^3*b^3 - 2*a*b^5)*c*f^2)*sin(d*x + c) - (3*(a^3*b^3 + a*b^5)*d
^2*e^2 - 6*(a^3*b^3 + a*b^5)*c*d*e*f - (2*a^5*b - 2*a*b^5 - 3*(a^3*b^3 + a*
b^5)*c^2)*f^2 - (3*a*b^5*d^2*e^2 - 6*a*b^5*c*d*e*f + (3*a*b^5*c^2 - 2*a^3*b
^3 + 2*a*b^5)*f^2)*cos(d*x + c)^2 + 2*(3*a^2*b^4*d^2*e^2 - 6*a^2*b^4*c*d*e*
f + (3*a^2*b^4*c^2 - 2*a^4*b^2 + 2*a^2*b^4)*f^2)*sin(d*x + c))*sqrt(-(a^2 -
 b^2)/b^2))*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^
2)/b^2) + 2*I*a) - 2*(2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e*f - 2*(a^6
+ 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f^2 - 2*((a^4*b^2 + a^2*b^4 - 2*b^6)*d*e*f
 - (a^4*b^2 + a^2*b^4 - 2*b^6)*c*f^2)*cos(d*x + c)^2 + 4*((a^5*b + a^3*b^3
- 2*a*b^5)*d*e*f - (a^5*b + a^3*b^3 - 2*a*b^5)*c*f^2)*sin(d*x + c) - (3*(a^
3*b^3 + a*b^5)*d^2*e^2 - 6*(a^3*b^3 + a*b^5)*c*d*e*f - (2*a^5*b - 2*a*b^5 -
 3*(a^3*b^3 + a*b^5)*c^2)*f^2 - (3*a*b^5*d^2*e^2 - 6*a*b^5*c*d*e*f + (3*a*b
^5*c^2 - 2*a^3*b^3 + 2*a*b^5)*f^2)*cos(d*x + c)^2 + 2*(3*a^2*b^4*d^2*e^2 -
6*a^2*b^4*c*d*e*f + (3*a^2*b^4*c^2 - 2*a^4*b^2 + 2*a^2*b^4)*f^2)*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b
*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)
*d*e*f - 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f^2 - 2*((a^4*b^2 + a^2*b^
4 - 2*b^6)*d*e*f - (a^4*b^2 + a^2*b^4 - 2*b^6)*c*f^2)*cos(d*x + c)^2 + 4*((
a^5*b + a^3*b^3 - 2*a*b^5)*d*e*f - (a^5*b + a^3*b^3 - 2*a*b^5)*c*f^2)*sin(d
*x + c) + (3*(a^3*b^3 + a*b^5)*d^2*e^2 - 6*(a^3*b^3 + a*b^5)*c*d*e*f - (2*a
^5*b - 2*a*b^5 - 3*(a^3*b^3 + a*b^5)*c^2)*f^2 - (3*a*b^5*d^2*e^2 - 6*a*b^5*
c*d*e*f + (3*a*b^5*c^2 - 2*a^3*b^3 + 2*a*b^5)*f^2)*cos(d*x + c)^2 + 2*(3*a^
2*b^4*d^2*e^2 - 6*a^2*b^4*c*d*e*f + (3*a^2*b^4*c^2 - 2*a^4*b^2 + 2*a^2*b^4)
*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) + 2*I*b*s
in(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(2*(a^6 + 2*a^4*b^2 -
 a^2*b^4 - 2*b^6)*d*e*f - 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f^2 - 2*(
(a^4*b^2 + a^2*b^4 - 2*b^6)*d*e*f - (a^4*b^2 + a^2*b^4 - 2*b^6)*c*f^2)*cos(
d*x + c)^2 + 4*((a^5*b + a^3*b^3 - 2*a*b^5)*d*e*f - (a^5*b + a^3*b^3 - 2*a*
b^5)*c*f^2)*sin(d*x + c) + (3*(a^3*b^3 + a*b^5)*d^2*e^2 - 6*(a^3*b^3 + a*b^
```

5)*c*d*e*f - (2*a^5*b - 2*a*b^5 - 3*(a^3*b^3 + a*b^5)*c^2)*f^2 - (3*a*b^5*d^2*e^2 - 6*a*b^5*c*d*e*f + (3*a*b^5*c^2 - 2*a^3*b^3 + 2*a*b^5)*f^2)*cos(d*x + c)^2 + 2*(3*a^2*b^4*d^2*e^2 - 6*a^2*b^4*c*d*e*f + (3*a^2*b^4*c^2 - 2*a^4*b^2 + 2*a^2*b^4)*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f^2*x + 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f^2 - 2*((a^4*b^2 + a^2*b^4 - 2*b^6)*d*f^2*x + (a^4*b^2 + a^2*b^4 - 2*b^6)*c*f^2)*cos(d*x + c)^2 + 4*((a^5*b + a^3*b^3 - 2*a*b^5)*d*f^2*x + (a^5*b + a^3*b^3 - 2*a*b^5)*c*f^2)*sin(d*x + c) - 3*((a^3*b^3 + a*b^5)*d^2*f^2*x^2 + 2*(a^3*b^3 + a*b^5)*d^2*e*f*x + 2*(a^3*b^3 + a*b^5)*c*d*e*f - (a^3*b^3 + a*b^5)*c^2*f^2 - (a*b^5*d^2*f^2*x^2 + 2*a*b^5*d^2*e*f*x + 2*a*b^5*c*d*e*f - a*b^5*c^2*f^2)*cos(d*x + c)^2 + 2*(a^2*b^4*d^2*f^2*x^2 + 2*a^2*b^4*d^2*e*f*x + 2*a^2*b^4*c*d*e*f - a^2*b^4*c^2*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f^2*x + 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f^2 - 2*((a^4*b^2 + a^2*b^4 - 2*b^6)*d*f^2*x + (a^4*b^2 + a^2*b^4 - 2*b^6)*c*f^2)*cos(d*x + c)^2 + 4*((a^5*b + a^3*b^3 - 2*a*b^5)*d*f^2*x + (a^5*b + a^3*b^3 - 2*a*b^5)*c*f^2)*sin(d*x + c) + 3*((a^3*b^3 + a*b^5)*d^2*f^2*x^2 + 2*(a^3*b^3 + a*b^5)*d^2*e*f*x + 2*(a^3*b^3 + a*b^5)*c*d*e*f - (a^3*b^3 + a*b^5)*c^2*f^2 - (a*b^5*d^2*f^2*x^2 + 2*a*b^5*d^2*e*f*x + 2*a*b^5*c*d*e*f - a*b^5*c^2*f^2)*cos(d*x + c)^2 + 2*(a^2*b^4*d^2*f^2*x^2 + 2*a^2*b^4*d^2*e*f*x + 2*a^2*b^4*c*d*e*f - a^2*b^4*c^2*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f^2*x + 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f^2 - 2*((a^4*b^2 + a^2*b^4 - 2*b^6)*d*f^2*x + (a^4*b^2 + a^2*b^4 - 2*b^6)*c*f^2)*cos(d*x + c)^2 + 4*((a^5*b + a^3*b^3 - 2*a*b^5)*d*f^2*x + (a^5*b + a^3*b^3 - 2*a*b^5)*c*f^2)*sin(d*x + c) - 3*((a^3*b^3 + a*b^5)*d^2*f^2*x^2 + 2*(a^3*b^3 + a*b^5)*d^2*e*f*x + 2*(a^3*b^3 + a*b^5)*c*d*e*f - (a^3*b^3 + a*b^5)*c^2*f^2 - (a*b^5*d^2*f^2*x^2 + 2*a*b^5*d^2*e*f*x + 2*a*b^5*c*d*e*f - a*b^5*c^2*f^2)*cos(d*x + c)^2 + 2*(a^2*b^4*d^2*f^2*x^2 + 2*a^2*b^4*d^2*e*f*x + 2*a^2*b^4*c*d*e*f - a^2*b^4*c^2*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f^2*x + 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*f^2 - 2*((a^4*b^2 + a^2*b^4 - 2*b^6)*d*f^2*x + (a^4*b^2 + a^2*b^4 - 2*b^6)*c*f^2)*cos(d*x + c)^2 + 4*((a^5*b + a^3*b^3 - 2*a*b^5)*d*f^2*x + (a^5*b + a^3*b^3 - 2*a*b^5)*c*f^2)*sin(d*x + c) + 3*((a^3*b^3 + a*b^5)*d^2*f^2*x^2 + 2*(a^3*b^3 + a*b^5)*d^2*e*f*x + 2*(a^3*b^3 + a*b^5)*c*d*e*f - (a^3*b^3 + a*b^5)*c^2*f^2 - (a*b^5*d^2*f^2*x^2 + 2*a*b^5*d^2*e*f*x + 2*a*b^5*c*d*e*f - a*b^5*c^2*f^2)*cos(d*x + c)^2 + 2*(a^2*b^4*d^2*f^2*x^2 + 2*a^2*b^4*d^2*e*f*x + 2*a^2*b^4*c*d*e*f - a^2*b^4*c^2*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 4*(2*(a^5*b - 2*a^3*b^3 + a*b^5)*d*f^2*x

```
 + 2*(a^5*b - 2*a^3*b^3 + a*b^5)*d*e*f + ((a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*f
^2*x^2 + 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*e*f*x + (a^4*b^2 + a^2*b^4 - 2*b
^6)*d^2*e^2)*cos(d*x + c))*sin(d*x + c))/((a^6*b^3 - 3*a^4*b^5 + 3*a^2*b^7
- b^9)*d^3*cos(d*x + c)^2 - 2*(a^7*b^2 - 3*a^5*b^4 + 3*a^3*b^6 - a*b^8)*d^3
*sin(d*x + c) - (a^8*b - 2*a^6*b^3 + 2*a^2*b^7 - b^9)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\sin\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sin(d*x + c)/(b*sin(d*x + c) + a)^3, x)
```

maple [F] time = 5.18, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\sin\left(dx+c\right)}{\left(a+b\sin\left(dx+c\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c))^3,x)
```

```
[Out] int((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c))^3,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sin(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x))^3,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sin(d*x+c)/(a+b*sin(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.250 $\int \frac{(e+fx)^3 \sin(c+dx)}{(a+b\sin(c+dx))^3}\,dx$

Optimal. Leaf size=2348

result too large to display

```
[Out] 3/2*I*a^3*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2
)^(5/2)/d+3/2*I*a*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/
(a^2-b^2)^(3/2)/d+6*I*f^2*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)
^(1/2)))/b/(a^2-b^2)/d^3+6*I*f^2*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a
^2-b^2)^(1/2)))/b/(a^2-b^2)/d^3+9/2*a^2*f*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))
/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^2/d^2+9/2*a^2*f*(f*x+e)^2*ln(1-I*b*exp(I*
(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^2/d^2+9/2*a^3*f*(f*x+e)^2*polylog
(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/d^2-9/2*a*f*(f
*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)
/d^2-9/2*a^3*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/
b/(a^2-b^2)^(5/2)/d^2+9/2*a*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^
2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2-3/2*I*a*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+
c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d-3/2*I*a^3*(f*x+e)^3*ln(1-I*b*e
xp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/d-3*f*(f*x+e)^2*ln(1-I
*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^2-3*f*(f*x+e)^2*ln(1-I
*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^2-3*a*f^3*polylog(2,I*
b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^4+3*a*f^3*polylog
(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^4+9*a^2*f^3*
polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^2/d^4+9*a^2*f
^3*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^2/d^4-9*a^
3*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/d
^4+9*a*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3
/2)/d^4+9*a^3*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-
b^2)^(5/2)/d^4-9*a*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/
(a^2-b^2)^(3/2)/d^4+I*(f*x+e)^3/b/(a^2-b^2)/d+(f*x+e)^3*cos(d*x+c)/(a^2-b^2
)/d/(a+b*sin(d*x+c))-3*I*a*f^2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)
^(1/2)))/b/(a^2-b^2)^(3/2)/d^3+3*I*a*f^2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a
+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^3+9*I*a^3*f^2*(f*x+e)*polylog(3,I*b*
exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/d^3+9*I*a*f^2*(f*x+e)
*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^3-9*
I*a^2*f^2*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-
b^2)^2/d^3-9*I*a^2*f^2*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1
/2)))/b/(a^2-b^2)^2/d^3-9*I*a*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a-(
a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^3-9*I*a^3*f^2*(f*x+e)*polylog(3,I*b*ex
p(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(5/2)/d^3-6*f^3*polylog(3,I*b
*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^4-6*f^3*polylog(3,I*b*ex
p(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^4-1/2*a*(f*x+e)^3*cos(d*x+c
)/(a^2-b^2)/d/(a+b*sin(d*x+c))^2-3/2*a^2*(f*x+e)^3*cos(d*x+c)/(a^2-b^2)^2/d
```

```
/(a+b*sin(d*x+c))-3/2*I*a^2*(f*x+e)^3/b/(a^2-b^2)^2/d-3/2*a*f*(f*x+e)^2/b/(
a^2-b^2)/d^2/(a+b*sin(d*x+c))
```

Rubi [A] time = 8.37, antiderivative size = 2348, normalized size of antiderivative = 1.00, number of steps used = 92, number of rules used = 14, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.538, Rules used = {6742, 3325, 3324, 3323, 2264, 2190, 2531, 6609, 2282, 6589, 4519, 4422, 2279, 2391}

result too large to display

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sin[c + d*x])/(a + b*Sin[c + d*x])^3,x]

[Out] (((-3*I)/2)*a^2*(e + f*x)^3)/(b*(a^2 - b^2)^2*d) + (I*(e + f*x)^3)/(b*(a^2
- b^2)*d) - ((3*I)*a*f^2*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[
a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^3) + (9*a^2*f*(e + f*x)^2*Log[1 - (I*b
*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(2*b*(a^2 - b^2)^2*d^2) - (3*f*(e
 + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b
^2)*d^2) + (((3*I)/2)*a^3*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sq
rt[a^2 - b^2])])/(b*(a^2 - b^2)^(5/2)*d) - (((3*I)/2)*a*(e + f*x)^3*Log[1 -
 (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d) + ((
3*I)*a*f^2*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/
(b*(a^2 - b^2)^(3/2)*d^3) + (9*a^2*f*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x
)))/(a + Sqrt[a^2 - b^2])])/(2*b*(a^2 - b^2)^2*d^2) - (3*f*(e + f*x)^2*Log[
1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^2) - (((
3*I)/2)*a^3*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])
])/(b*(a^2 - b^2)^(5/2)*d) + (((3*I)/2)*a*(e + f*x)^3*Log[1 - (I*b*E^(I*(c
+ d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d) - (3*a*f^3*PolyLog
[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^4)
 - ((9*I)*a^2*f^2*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2
- b^2])])/(b*(a^2 - b^2)^2*d^3) + ((6*I)*f^2*(e + f*x)*PolyLog[2, (I*b*E^(I
*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^3) + (9*a^3*f*(e + f*
x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(2*b*(a^2 - b
^2)^(5/2)*d^2) - (9*a*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - S
qrt[a^2 - b^2])])/(2*b*(a^2 - b^2)^(3/2)*d^2) + (3*a*f^3*PolyLog[2, (I*b*E^
(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^4) - ((9*I)*a
^2*f^2*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(
b*(a^2 - b^2)^2*d^3) + ((6*I)*f^2*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x))
)/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^3) - (9*a^3*f*(e + f*x)^2*PolyLo
g[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(2*b*(a^2 - b^2)^(5/2)*d
^2) + (9*a*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b
^2])])/(2*b*(a^2 - b^2)^(3/2)*d^2) + (9*a^2*f^3*PolyLog[3, (I*b*E^(I*(c + d
*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^2*d^4) - (6*f^3*PolyLog[3, (I*
b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^4) + ((9*I)*a^3
*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*
```

```
(a^2 - b^2)^(5/2)*d^3) - ((9*I)*a*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d
*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^3) + (9*a^2*f^3*PolyLo
g[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^2*d^4) -
(6*f^3*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b
^2)*d^4) - ((9*I)*a^3*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + S
qrt[a^2 - b^2])])/(b*(a^2 - b^2)^(5/2)*d^3) + ((9*I)*a*f^2*(e + f*x)*PolyLo
g[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^3
) - (9*a^3*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*
(a^2 - b^2)^(5/2)*d^4) + (9*a*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - Sqr
t[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^4) + (9*a^3*f^3*PolyLog[4, (I*b*E^(I
*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(5/2)*d^4) - (9*a*f^3*P
olyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2
)*d^4) - (a*(e + f*x)^3*Cos[c + d*x])/(2*(a^2 - b^2)*d*(a + b*Sin[c + d*x])
^2) - (3*a*f*(e + f*x)^2)/(2*b*(a^2 - b^2)*d^2*(a + b*Sin[c + d*x])) - (3*a
^2*(e + f*x)^3*Cos[c + d*x])/(2*(a^2 - b^2)^2*d*(a + b*Sin[c + d*x])) + ((e
 + f*x)^3*Cos[c + d*x])/((a^2 - b^2)*d*(a + b*Sin[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 3325

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(n_),
 x_Symbol] :> -Simp[(b*(c + d*x)^m*Cos[e + f*x]*(a + b*Sin[e + f*x])^(n + 1
))/(f*(n + 1)*(a^2 - b^2)), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m*(a +
b*Sin[e + f*x])^(n + 1), x], x] - Dist[(b*(n + 2))/((n + 1)*(a^2 - b^2)), I
nt[(c + d*x)^m*Sin[e + f*x]*(a + b*Sin[e + f*x])^(n + 1), x], x] + Dist[(b*
d*m)/(f*(n + 1)*(a^2 - b^2)), Int[(c + d*x)^(m - 1)*Cos[e + f*x]*(a + b*Sin
[e + f*x])^(n + 1), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && ILtQ[n, -2] && IGtQ[m, 0]
```

Rule 4422

```
Int[Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sin[(c
_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sin[c + d*x
])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^(m
- 1)*(a + b*Sin[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x
] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\sin(c+dx)}{(a+b\sin(c+dx))^3}\,dx = \int\left(-\frac{a(e+fx)^3}{b(a+b\sin(c+dx))^3}+\frac{(e+fx)^3}{b(a+b\sin(c+dx))^2}\right)dx$$

$$= \frac{\int \frac{(e+fx)^3}{(a+b\sin(c+dx))^2}\,dx}{b} - \frac{a\int \frac{(e+fx)^3}{(a+b\sin(c+dx))^3}\,dx}{b}$$

$$= -\frac{a(e+fx)^3\cos(c+dx)}{2\left(a^2-b^2\right)d(a+b\sin(c+dx))^2} + \frac{(e+fx)^3\cos(c+dx)}{\left(a^2-b^2\right)d(a+b\sin(c+dx))} + \frac{a\int \frac{(e+fx)^3\sin}{(a+b\sin(c}}{2\left(a^2-\right.}$$

$$= \frac{i(e+fx)^3}{b\left(a^2-b^2\right)d} - \frac{a(e+fx)^3\cos(c+dx)}{2\left(a^2-b^2\right)d(a+b\sin(c+dx))^2} - \frac{3af(e+fx)^2}{2b\left(a^2-b^2\right)d^2(a+b\sin(c+dx}$$

$$= -\frac{ia^2(e+fx)^3}{b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^3}{b\left(a^2-b^2\right)d} - \frac{3f(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^2} - \frac{3f(e+fx)^2\log}{b\left(a^2\right.}$$

$$= -\frac{ia^2(e+fx)^3}{b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^3}{b\left(a^2-b^2\right)d} + \frac{3a^2f(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^2 d^2} - \frac{3f(e+fx)^2}{b\left(\right.}$$

$$= -\frac{3ia^2(e+fx)^3}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^3}{b\left(a^2-b^2\right)d} - \frac{3iaf^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^3} + \frac{3a^2f(e+f}{b}$$

$$= -\frac{3ia^2(e+fx)^3}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^3}{b\left(a^2-b^2\right)d} - \frac{3iaf^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^3} + \frac{9a^2f(e+f}{2b}$$

$$= -\frac{3ia^2(e+fx)^3}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^3}{b\left(a^2-b^2\right)d} - \frac{3iaf^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^3} + \frac{9a^2f(e+f}{2b}$$

$$= -\frac{3ia^2(e+fx)^3}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^3}{b\left(a^2-b^2\right)d} - \frac{3iaf^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^3} + \frac{9a^2f(e+f}{2b}$$

$$= -\frac{3ia^2(e+fx)^3}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^3}{b\left(a^2-b^2\right)d} - \frac{3iaf^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^3} + \frac{9a^2f(e+f}{2b}$$

$$= -\frac{3ia^2(e+fx)^3}{2b\left(a^2-b^2\right)^2 d} + \frac{i(e+fx)^3}{b\left(a^2-b^2\right)d} - \frac{3iaf^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^3} + \frac{9a^2f(e+f}{2b}$$

Mathematica [B] time = 22.60, size = 11208, normalized size = 4.77

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sin[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] Result too large to show
```

fricas [C] time = 1.77, size = 10622, normalized size = 4.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/8*(12*(a^6 - 2*a^4*b^2 + a^2*b^4)*d^2*f^3*x^2 + 24*(a^6 - 2*a^4*b^2 + a^2
*b^4)*d^2*e*f^2*x + 12*(a^6 - 2*a^4*b^2 + a^2*b^4)*d^2*e^2*f + 2*(18*I*a*b^
5*f^3*cos(d*x + c)^2 - 36*I*a^2*b^4*f^3*sin(d*x + c) - 18*I*(a^3*b^3 + a*b^
5)*f^3)*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin
(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b
) + 2*(-18*I*a*b^5*f^3*cos(d*x + c)^2 + 36*I*a^2*b^4*f^3*sin(d*x + c) + 18*
I*(a^3*b^3 + a*b^5)*f^3)*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d
*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2))/b) + 2*(-18*I*a*b^5*f^3*cos(d*x + c)^2 + 36*I*a^2*b^4*f^3*s
in(d*x + c) + 18*I*(a^3*b^3 + a*b^5)*f^3)*sqrt(-(a^2 - b^2)/b^2)*polylog(4,
 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(
d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(18*I*a*b^5*f^3*cos(d*x + c)^2 - 3
6*I*a^2*b^4*f^3*sin(d*x + c) - 18*I*(a^3*b^3 + a*b^5)*f^3)*sqrt(-(a^2 - b^2
)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*
x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 4*((2*a^5*b - a^3*b
^3 - a*b^5)*d^3*f^3*x^3 + 3*(2*a^5*b - a^3*b^3 - a*b^5)*d^3*e*f^2*x^2 + 3*(
2*a^5*b - a^3*b^3 - a*b^5)*d^3*e^2*f*x + (2*a^5*b - a^3*b^3 - a*b^5)*d^3*e^
3)*cos(d*x + c) + (-12*I*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f^3*x - 12*I
*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e*f^2 + (12*I*(a^4*b^2 + a^2*b^4 - 2
*b^6)*d*f^3*x + 12*I*(a^4*b^2 + a^2*b^4 - 2*b^6)*d*e*f^2)*cos(d*x + c)^2 +
(-24*I*(a^5*b + a^3*b^3 - 2*a*b^5)*d*f^3*x - 24*I*(a^5*b + a^3*b^3 - 2*a*b^
5)*d*e*f^2)*sin(d*x + c) + 2*(9*I*(a^3*b^3 + a*b^5)*d^2*f^3*x^2 + 18*I*(a^3
*b^3 + a*b^5)*d^2*e*f^2*x + 9*I*(a^3*b^3 + a*b^5)*d^2*e^2*f - 6*I*(a^5*b -
a*b^5)*f^3 + (-9*I*a*b^5*d^2*f^3*x^2 - 18*I*a*b^5*d^2*e*f^2*x - 9*I*a*b^5*d
^2*e^2*f + 6*I*(a^3*b^3 - a*b^5)*f^3)*cos(d*x + c)^2 + (18*I*a^2*b^4*d^2*f^
3*x^2 + 36*I*a^2*b^4*d^2*e*f^2*x + 18*I*a^2*b^4*d^2*e^2*f - 12*I*(a^4*b^2 -
 a^2*b^4)*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*cos(
d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(
```

a^2 - b^2)/b^2) + 2*b)/b + 1) + (-12*I*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*
d*f^3*x - 12*I*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e*f^2 + (12*I*(a^4*b^2
 + a^2*b^4 - 2*b^6)*d*f^3*x + 12*I*(a^4*b^2 + a^2*b^4 - 2*b^6)*d*e*f^2)*cos
(d*x + c)^2 + (-24*I*(a^5*b + a^3*b^3 - 2*a*b^5)*d*f^3*x - 24*I*(a^5*b + a^
3*b^3 - 2*a*b^5)*d*e*f^2)*sin(d*x + c) + 2*(-9*I*(a^3*b^3 + a*b^5)*d^2*f^3*
x^2 - 18*I*(a^3*b^3 + a*b^5)*d^2*e*f^2*x - 9*I*(a^3*b^3 + a*b^5)*d^2*e^2*f
 + 6*I*(a^5*b - a*b^5)*f^3 + (9*I*a*b^5*d^2*f^3*x^2 + 18*I*a*b^5*d^2*e*f^2*x
 + 9*I*a*b^5*d^2*e^2*f - 6*I*(a^3*b^3 - a*b^5)*f^3)*cos(d*x + c)^2 + (-18*I
*a^2*b^4*d^2*f^3*x^2 - 36*I*a^2*b^4*d^2*e*f^2*x - 18*I*a^2*b^4*d^2*e^2*f +
12*I*(a^4*b^2 - a^2*b^4)*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*dilog(-
1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*
x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (12*I*(a^6 + 2*a^4*b^2 - a^2
*b^4 - 2*b^6)*d*f^3*x + 12*I*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*e*f^2 +
(-12*I*(a^4*b^2 + a^2*b^4 - 2*b^6)*d*f^3*x - 12*I*(a^4*b^2 + a^2*b^4 - 2*b^
6)*d*e*f^2)*cos(d*x + c)^2 + (24*I*(a^5*b + a^3*b^3 - 2*a*b^5)*d*f^3*x + 24
I(a^5*b + a^3*b^3 - 2*a*b^5)*d*e*f^2)*sin(d*x + c) + 2*(-9*I*(a^3*b^3 + a
*b^5)*d^2*f^3*x^2 - 18*I*(a^3*b^3 + a*b^5)*d^2*e*f^2*x - 9*I*(a^3*b^3 + a*b
^5)*d^2*e^2*f + 6*I*(a^5*b - a*b^5)*f^3 + (9*I*a*b^5*d^2*f^3*x^2 + 18*I*a*b
^5*d^2*e*f^2*x + 9*I*a*b^5*d^2*e^2*f - 6*I*(a^3*b^3 - a*b^5)*f^3)*cos(d*x +
 c)^2 + (-18*I*a^2*b^4*d^2*f^3*x^2 - 36*I*a^2*b^4*d^2*e*f^2*x - 18*I*a^2*b^
4*d^2*e^2*f + 12*I*(a^4*b^2 - a^2*b^4)*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2))*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x +
c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (12*I*(a^6 +
2*a^4*b^2 - a^2*b^4 - 2*b^6)*d*f^3*x + 12*I*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*
b^6)*d*e*f^2 + (-12*I*(a^4*b^2 + a^2*b^4 - 2*b^6)*d*f^3*x - 12*I*(a^4*b^2 +
 a^2*b^4 - 2*b^6)*d*e*f^2)*cos(d*x + c)^2 + (24*I*(a^5*b + a^3*b^3 - 2*a*b^
5)*d*f^3*x + 24*I*(a^5*b + a^3*b^3 - 2*a*b^5)*d*e*f^2)*sin(d*x + c) + 2*(9*
I*(a^3*b^3 + a*b^5)*d^2*f^3*x^2 + 18*I*(a^3*b^3 + a*b^5)*d^2*e*f^2*x + 9*I*
(a^3*b^3 + a*b^5)*d^2*e^2*f - 6*I*(a^5*b - a*b^5)*f^3 + (-9*I*a*b^5*d^2*f^3
*x^2 - 18*I*a*b^5*d^2*e*f^2*x - 9*I*a*b^5*d^2*e^2*f + 6*I*(a^3*b^3 - a*b^5)
*f^3)*cos(d*x + c)^2 + (18*I*a^2*b^4*d^2*f^3*x^2 + 36*I*a^2*b^4*d^2*e*f^2*x
 + 18*I*a^2*b^4*d^2*e^2*f - 12*I*(a^4*b^2 - a^2*b^4)*f^3)*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2))*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2
*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) -
 6*((a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d^2*e^2*f - 2*(a^6 + 2*a^4*b^2 - a^
2*b^4 - 2*b^6)*c*d*e*f^2 + (a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c^2*f^3 - ((
a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*e^2*f - 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*c*d*e*
f^2 + (a^4*b^2 + a^2*b^4 - 2*b^6)*c^2*f^3)*cos(d*x + c)^2 + 2*((a^5*b + a^3
*b^3 - 2*a*b^5)*d^2*e^2*f - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*c*d*e*f^2 + (a^5*
b + a^3*b^3 - 2*a*b^5)*c^2*f^3)*sin(d*x + c) - ((a^3*b^3 + a*b^5)*d^3*e^3 -
 3*(a^3*b^3 + a*b^5)*c*d^2*e^2*f - (2*a^5*b - 2*a*b^5 - 3*(a^3*b^3 + a*b^5)
*c^2)*d*e*f^2 - ((a^3*b^3 + a*b^5)*c^3 - 2*(a^5*b - a*b^5)*c)*f^3 - (a*b^5*
d^3*e^3 - 3*a*b^5*c*d^2*e^2*f + (3*a*b^5*c^2 - 2*a^3*b^3 + 2*a*b^5)*d*e*f^2
 - (a*b^5*c^3 - 2*(a^3*b^3 - a*b^5)*c)*f^3)*cos(d*x + c)^2 + 2*(a^2*b^4*d^3
*e^3 - 3*a^2*b^4*c*d^2*e^2*f + (3*a^2*b^4*c^2 - 2*a^4*b^2 + 2*a^2*b^4)*d*e*

f^2 - (a^2*b^4*c^3 - 2*(a^4*b^2 - a^2*b^4)*c)*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 6*((a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d^2*e^2*f - 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*d*e*f^2 + (a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c^2*f^3 - ((a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*e^2*f - 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*c*d*e*f^2 + (a^4*b^2 + a^2*b^4 - 2*b^6)*c^2*f^3)*cos(d*x + c)^2 + 2*((a^5*b + a^3*b^3 - 2*a*b^5)*d^2*e^2*f - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*c*d*e*f^2 + (a^5*b + a^3*b^3 - 2*a*b^5)*c^2*f^3)*sin(d*x + c) - ((a^3*b^3 + a*b^5)*d^3*e^3 - 3*(a^3*b^3 + a*b^5)*c*d^2*e^2*f - (2*a^5*b - 2*a*b^5 - 3*(a^3*b^3 + a*b^5)*c^2)*d*e*f^2 - ((a^3*b^3 + a*b^5)*c^3 - 2*(a^5*b - a*b^5)*c)*f^3 - (a*b^5*d^3*e^3 - 3*a*b^5*c*d^2*e^2*f + (3*a*b^5*c^2 - 2*a^3*b^3 + 2*a*b^5)*d*e*f^2 - (a*b^5*c^3 - 2*(a^3*b^3 - a*b^5)*c)*f^3)*cos(d*x + c)^2 + 2*(a^2*b^4*d^3*e^3 - 3*a^2*b^4*c*d^2*e^2*f + (3*a^2*b^4*c^2 - 2*a^4*b^2 + 2*a^2*b^4)*d*e*f^2 - (a^2*b^4*c^3 - 2*(a^4*b^2 - a^2*b^4)*c)*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 6*((a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d^2*e^2*f - 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*d*e*f^2 + (a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c^2*f^3 - ((a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*e^2*f - 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*c*d*e*f^2 + (a^4*b^2 + a^2*b^4 - 2*b^6)*c^2*f^3)*cos(d*x + c)^2 + 2*((a^5*b + a^3*b^3 - 2*a*b^5)*d^2*e^2*f - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*c*d*e*f^2 + (a^5*b + a^3*b^3 - 2*a*b^5)*c^2*f^3)*sin(d*x + c) + ((a^3*b^3 + a*b^5)*d^3*e^3 - 3*(a^3*b^3 + a*b^5)*c*d^2*e^2*f - (2*a^5*b - 2*a*b^5 - 3*(a^3*b^3 + a*b^5)*c^2)*d*e*f^2 - ((a^3*b^3 + a*b^5)*c^3 - 2*(a^5*b - a*b^5)*c)*f^3 - (a*b^5*d^3*e^3 - 3*a*b^5*c*d^2*e^2*f + (3*a*b^5*c^2 - 2*a^3*b^3 + 2*a*b^5)*d*e*f^2 - (a*b^5*c^3 - 2*(a^3*b^3 - a*b^5)*c)*f^3)*cos(d*x + c)^2 + 2*(a^2*b^4*d^3*e^3 - 3*a^2*b^4*c*d^2*e^2*f + (3*a^2*b^4*c^2 - 2*a^4*b^2 + 2*a^2*b^4)*d*e*f^2 - (a^2*b^4*c^3 - 2*(a^4*b^2 - a^2*b^4)*c)*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 6*((a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d^2*e^2*f - 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*d*e*f^2 + (a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c^2*f^3 - ((a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*e^2*f - 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*c*d*e*f^2 + (a^4*b^2 + a^2*b^4 - 2*b^6)*c^2*f^3)*cos(d*x + c)^2 + 2*((a^5*b + a^3*b^3 - 2*a*b^5)*d^2*e^2*f - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*c*d*e*f^2 + (a^5*b + a^3*b^3 - 2*a*b^5)*c^2*f^3)*sin(d*x + c) + ((a^3*b^3 + a*b^5)*d^3*e^3 - 3*(a^3*b^3 + a*b^5)*c*d^2*e^2*f - (2*a^5*b - 2*a*b^5 - 3*(a^3*b^3 + a*b^5)*c^2)*d*e*f^2 - ((a^3*b^3 + a*b^5)*c^3 - 2*(a^5*b - a*b^5)*c)*f^3 - (a*b^5*d^3*e^3 - 3*a*b^5*c*d^2*e^2*f + (3*a*b^5*c^2 - 2*a^3*b^3 + 2*a*b^5)*d*e*f^2 - (a*b^5*c^3 - 2*(a^3*b^3 - a*b^5)*c)*f^3)*cos(d*x + c)^2 + 2*(a^2*b^4*d^3*e^3 - 3*a^2*b^4*c*d^2*e^2*f + (3*a^2*b^4*c^2 - 2*a^4*b^2 + 2*a^2*b^4)*d*e*f^2 - (a^2*b^4*c^3 - 2*(a^4*b^2 - a^2*b^4)*c)*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 6*((a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d^2*f^3*x^2 + 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d^2*e*f^2*x + 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*d*e*f^2 - (a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c^2*f^3 - ((a^4*b^2 + a^2* b^4 - 2*b^6)*d^2*f^3*x^2 + 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*e*f^2*x + 2*(a ^4*b^2 + a^2*b^4 - 2*b^6)*c*d*e*f^2 - (a^4*b^2 + a^2*b^4 - 2*b^6)*c^2*f^3)* cos(d*x + c)^2 + 2*((a^5*b + a^3*b^3 - 2*a*b^5)*d^2*f^3*x^2 + 2*(a^5*b + a^ 3*b^3 - 2*a*b^5)*d^2*e*f^2*x + 2*(a^5*b + a^3*b^3 - 2*a*b^5)*c*d*e*f^2 - (a ^5*b + a^3*b^3 - 2*a*b^5)*c^2*f^3)*sin(d*x + c) - ((a^3*b^3 + a*b^5)*d^3*f^ 3*x^3 + 3*(a^3*b^3 + a*b^5)*d^3*e*f^2*x^2 + 3*(a^3*b^3 + a*b^5)*c*d^2*e^2*f - 3*(a^3*b^3 + a*b^5)*c^2*d*e*f^2 + ((a^3*b^3 + a*b^5)*c^3 - 2*(a^5*b - a* b^5)*c)*f^3 - (a*b^5*d^3*f^3*x^3 + 3*a*b^5*d^3*e*f^2*x^2 + 3*a*b^5*c*d^2*e^ 2*f - 3*a*b^5*c^2*d*e*f^2 + (a*b^5*c^3 - 2*(a^3*b^3 - a*b^5)*c)*f^3 + (3*a* b^5*d^3*e^2*f - 2*(a^3*b^3 - a*b^5)*d*f^3)*x)*cos(d*x + c)^2 + (3*(a^3*b^3 + a*b^5)*d^3*e^2*f - 2*(a^5*b - a*b^5)*d*f^3)*x + 2*(a^2*b^4*d^3*f^3*x^3 + 3*a^2*b^4*d^3*e*f^2*x^2 + 3*a^2*b^4*c*d^2*e^2*f - 3*a^2*b^4*c^2*d*e*f^2 + (a^2*b^4*c^3 - 2*(a^4*b^2 - a^2*b^4)*c)*f^3 + (3*a^2*b^4*d^3*e^2*f - 2*(a^4* b^2 - a^2*b^4)*d*f^3)*x)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(2*I *a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))* sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 6*((a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d ^2*f^3*x^2 + 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d^2*e*f^2*x + 2*(a^6 + 2 *a^4*b^2 - a^2*b^4 - 2*b^6)*c*d*e*f^2 - (a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6) *c^2*f^3 - ((a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*f^3*x^2 + 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*e*f^2*x + 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*c*d*e*f^2 - (a^4*b^2 + a^2*b^4 - 2*b^6)*c^2*f^3)*cos(d*x + c)^2 + 2*((a^5*b + a^3*b^3 - 2*a*b^5)* d^2*f^3*x^2 + 2*(a^5*b + a^3*b^3 - 2*a*b^5)*d^2*e*f^2*x + 2*(a^5*b + a^3*b^ 3 - 2*a*b^5)*c*d*e*f^2 - (a^5*b + a^3*b^3 - 2*a*b^5)*c^2*f^3)*sin(d*x + c) + ((a^3*b^3 + a*b^5)*d^3*f^3*x^3 + 3*(a^3*b^3 + a*b^5)*d^3*e*f^2*x^2 + 3*(a ^3*b^3 + a*b^5)*c*d^2*e^2*f - 3*(a^3*b^3 + a*b^5)*c^2*d*e*f^2 + ((a^3*b^3 + a*b^5)*c^3 - 2*(a^5*b - a*b^5)*c)*f^3 - (a*b^5*d^3*f^3*x^3 + 3*a*b^5*d^3*e *f^2*x^2 + 3*a*b^5*c*d^2*e^2*f - 3*a*b^5*c^2*d*e*f^2 + (a*b^5*c^3 - 2*(a^3* b^3 - a*b^5)*c)*f^3 + (3*a*b^5*d^3*e^2*f - 2*(a^3*b^3 - a*b^5)*d*f^3)*x)*co s(d*x + c)^2 + (3*(a^3*b^3 + a*b^5)*d^3*e^2*f - 2*(a^5*b - a*b^5)*d*f^3)*x + 2*(a^2*b^4*d^3*f^3*x^3 + 3*a^2*b^4*d^3*e*f^2*x^2 + 3*a^2*b^4*c*d^2*e^2*f - 3*a^2*b^4*c^2*d*e*f^2 + (a^2*b^4*c^3 - 2*(a^4*b^2 - a^2*b^4)*c)*f^3 + (3* a^2*b^4*d^3*e^2*f - 2*(a^4*b^2 - a^2*b^4)*d*f^3)*x)*sin(d*x + c))*sqrt(-(a^ 2 - b^2)/b^2))*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d* x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 6*((a^6 + 2*a ^4*b^2 - a^2*b^4 - 2*b^6)*d^2*f^3*x^2 + 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^ 6)*d^2*e*f^2*x + 2*(a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c*d*e*f^2 - (a^6 + 2 *a^4*b^2 - a^2*b^4 - 2*b^6)*c^2*f^3 - ((a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*f^3* x^2 + 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*e*f^2*x + 2*(a^4*b^2 + a^2*b^4 - 2* b^6)*c*d*e*f^2 - (a^4*b^2 + a^2*b^4 - 2*b^6)*c^2*f^3)*cos(d*x + c)^2 + 2*((a^5*b + a^3*b^3 - 2*a*b^5)*d^2*f^3*x^2 + 2*(a^5*b + a^3*b^3 - 2*a*b^5)*d^2* e*f^2*x + 2*(a^5*b + a^3*b^3 - 2*a*b^5)*c*d*e*f^2 - (a^5*b + a^3*b^3 - 2*a* b^5)*c^2*f^3)*sin(d*x + c) - ((a^3*b^3 + a*b^5)*d^3*f^3*x^3 + 3*(a^3*b^3 + a*b^5)*d^3*e*f^2*x^2 + 3*(a^3*b^3 + a*b^5)*c*d^2*e^2*f - 3*(a^3*b^3 + a*b^5)*c^2*d*e*f^2 + ((a^3*b^3 + a*b^5)*c^3 - 2*(a^5*b - a*b^5)*c)*f^3 - (a*b^5* d^3*f^3*x^3 + 3*a*b^5*d^3*e*f^2*x^2 + 3*a*b^5*c*d^2*e^2*f - 3*a*b^5*c^2*d*e

```
*f^2 + (a*b^5*c^3 - 2*(a^3*b^3 - a*b^5)*c)*f^3 + (3*a*b^5*d^3*e^2*f - 2*(a^
3*b^3 - a*b^5)*d*f^3)*x)*cos(d*x + c)^2 + (3*(a^3*b^3 + a*b^5)*d^3*e^2*f -
2*(a^5*b - a*b^5)*d*f^3)*x + 2*(a^2*b^4*d^3*f^3*x^3 + 3*a^2*b^4*d^3*e*f^2*x
^2 + 3*a^2*b^4*c*d^2*e^2*f - 3*a^2*b^4*c^2*d*e*f^2 + (a^2*b^4*c^3 - 2*(a^4*
b^2 - a^2*b^4)*c)*f^3 + (3*a^2*b^4*d^3*e^2*f - 2*(a^4*b^2 - a^2*b^4)*d*f^3)
*x)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(-2*I*a*cos(d*x + c) + 2*
a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2) + 2*b)/b) - 6*((a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d^2*f^3*x^2 + 2*(a^6
+ 2*a^4*b^2 - a^2*b^4 - 2*b^6)*d^2*e*f^2*x + 2*(a^6 + 2*a^4*b^2 - a^2*b^4 -
 2*b^6)*c*d*e*f^2 - (a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*c^2*f^3 - ((a^4*b^2
 + a^2*b^4 - 2*b^6)*d^2*f^3*x^2 + 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*d^2*e*f^2*x
 + 2*(a^4*b^2 + a^2*b^4 - 2*b^6)*c*d*e*f^2 - (a^4*b^2 + a^2*b^4 - 2*b^6)*c^
2*f^3)*cos(d*x + c)^2 + 2*((a^5*b + a^3*b^3 - 2*a*b^5)*d^2*f^3*x^2 + 2*(a^5
*b + a^3*b^3 - 2*a*b^5)*d^2*e*f^2*x + 2*(a^5*b + a^3*b^3 - 2*a*b^5)*c*d*e*f
^2 - (a^5*b + a^3*b^3 - 2*a*b^5)*c^2*f^3)*sin(d*x + c) + ((a^3*b^3 + a*b^5)
*d^3*f^3*x^3 + 3*(a^3*b^3 + a*b^5)*d^3*e*f^2*x^2 + 3*(a^3*b^3 + a*b^5)*c*d^
2*e^2*f - 3*(a^3*b^3 + a*b^5)*c^2*d*e*f^2 + ((a^3*b^3 + a*b^5)*c^3 - 2*(a^5
*b - a*b^5)*c)*f^3 - (a*b^5*d^3*f^3*x^3 + 3*a*b^5*d^3*e*f^2*x^2 + 3*a*b^5*c
*d^2*e^2*f - 3*a*b^5*c^2*d*e*f^2 + (a*b^5*c^3 - 2*(a^3*b^3 - a*b^5)*c)*f^3
+ (3*a*b^5*d^3*e^2*f - 2*(a^3*b^3 - a*b^5)*d*f^3)*x)*cos(d*x + c)^2 + (3*(a
^3*b^3 + a*b^5)*d^3*e^2*f - 2*(a^5*b - a*b^5)*d*f^3)*x + 2*(a^2*b^4*d^3*f^3
*x^3 + 3*a^2*b^4*d^3*e*f^2*x^2 + 3*a^2*b^4*c*d^2*e^2*f - 3*a^2*b^4*c^2*d*e*
f^2 + (a^2*b^4*c^3 - 2*(a^4*b^2 - a^2*b^4)*c)*f^3 + (3*a^2*b^4*d^3*e^2*f -
2*(a^4*b^2 - a^2*b^4)*d*f^3)*x)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1
/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*
x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 12*((a^4*b^2 + a^2*b^4 - 2*b^6)*
f^3*cos(d*x + c)^2 - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*f^3*sin(d*x + c) - (a^6
+ 2*a^4*b^2 - a^2*b^4 - 2*b^6)*f^3 - 3*((a^3*b^3 + a*b^5)*d*f^3*x + (a^3*b^
3 + a*b^5)*d*e*f^2 - (a*b^5*d*f^3*x + a*b^5*d*e*f^2)*cos(d*x + c)^2 + 2*(a^
2*b^4*d*f^3*x + a^2*b^4*d*e*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*poly
log(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b
*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*((a^4*b^2 + a^2*b^4 - 2*b^6)
*f^3*cos(d*x + c)^2 - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*f^3*sin(d*x + c) - (a^6
 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*f^3 + 3*((a^3*b^3 + a*b^5)*d*f^3*x + (a^3*b
^3 + a*b^5)*d*e*f^2 - (a*b^5*d*f^3*x + a*b^5*d*e*f^2)*cos(d*x + c)^2 + 2*(a
^2*b^4*d*f^3*x + a^2*b^4*d*e*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*pol
ylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*
b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*((a^4*b^2 + a^2*b^4 - 2*b^6
)*f^3*cos(d*x + c)^2 - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*f^3*sin(d*x + c) - (a^
6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*f^3 - 3*((a^3*b^3 + a*b^5)*d*f^3*x + (a^3*
b^3 + a*b^5)*d*e*f^2 - (a*b^5*d*f^3*x + a*b^5*d*e*f^2)*cos(d*x + c)^2 + 2*(
a^2*b^4*d*f^3*x + a^2*b^4*d*e*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*po
lylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) -
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*((a^4*b^2 + a^2*b^4 - 2*b
^6)*f^3*cos(d*x + c)^2 - 2*(a^5*b + a^3*b^3 - 2*a*b^5)*f^3*sin(d*x + c) - (
```

```
a^6 + 2*a^4*b^2 - a^2*b^4 - 2*b^6)*f^3 + 3*((a^3*b^3 + a*b^5)*d*f^3*x + (a^
3*b^3 + a*b^5)*d*e*f^2 - (a*b^5*d*f^3*x + a*b^5*d*e*f^2)*cos(d*x + c)^2 + 2
*(a^2*b^4*d*f^3*x + a^2*b^4*d*e*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*
polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c)
- I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 4*(3*(a^5*b - 2*a^3*b^3 +
a*b^5)*d^2*f^3*x^2 + 6*(a^5*b - 2*a^3*b^3 + a*b^5)*d^2*e*f^2*x + 3*(a^5*b -
 2*a^3*b^3 + a*b^5)*d^2*e^2*f + ((a^4*b^2 + a^2*b^4 - 2*b^6)*d^3*f^3*x^3 +
3*(a^4*b^2 + a^2*b^4 - 2*b^6)*d^3*e*f^2*x^2 + 3*(a^4*b^2 + a^2*b^4 - 2*b^6)
*d^3*e^2*f*x + (a^4*b^2 + a^2*b^4 - 2*b^6)*d^3*e^3)*cos(d*x + c))*sin(d*x +
 c))/((a^6*b^3 - 3*a^4*b^5 + 3*a^2*b^7 - b^9)*d^4*cos(d*x + c)^2 - 2*(a^7*b
^2 - 3*a^5*b^4 + 3*a^3*b^6 - a*b^8)*d^4*sin(d*x + c) - (a^8*b - 2*a^6*b^3 +
 2*a^2*b^7 - b^9)*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sin\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sin(d*x + c)/(b*sin(d*x + c) + a)^3, x)
```

maple [F] time = 3.66, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sin\left(dx+c\right)}{\left(a+b\sin\left(dx+c\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c))^3,x)
```

```
[Out] int((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c))^3,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sin(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad **[F(-1)]** time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((sin(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x))^3,x)
```

```
[Out] \text{Hanged}
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sin(d*x+c)/(a+b*sin(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.251 $\int \frac{(e+fx)^3 \cos(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=151

$$\frac{12if^3\text{Li}_4\left(ie^{i(c+dx)}\right)}{ad^4}+\frac{12f^2(e+fx)\text{Li}_3\left(ie^{i(c+dx)}\right)}{ad^3}-\frac{6if(e+fx)^2\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2}+\frac{2(e+fx)^3\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{i(e+}{4a}$$

```
[Out] -1/4*I*(f*x+e)^4/a/f+2*(f*x+e)^3*ln(1-I*exp(I*(d*x+c)))/a/d-6*I*f*(f*x+e)^2
*polylog(2,I*exp(I*(d*x+c)))/a/d^2+12*f^2*(f*x+e)*polylog(3,I*exp(I*(d*x+c)
))/a/d^3+12*I*f^3*polylog(4,I*exp(I*(d*x+c)))/a/d^4
```

Rubi [A] time = 0.23, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {4517, 2190, 2531, 6609, 2282, 6589}

$$\frac{12f^2(e+fx)\text{PolyLog}\left(3,ie^{i(c+dx)}\right)}{ad^3}-\frac{6if(e+fx)^2\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^2}+\frac{12if^3\text{PolyLog}\left(4,ie^{i(c+dx)}\right)}{ad^4}+\frac{2(e+fx)^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-I/4)*(e + f*x)^4)/(a*f) + (2*(e + f*x)^3*Log[1 - I*E^(I*(c + d*x))])/(a*
d) - ((6*I)*f*(e + f*x)^2*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^2) + (12*f^2*
(e + f*x)*PolyLog[3, I*E^(I*(c + d*x))])/(a*d^3) + ((12*I)*f^3*PolyLog[4, I
*E^(I*(c + d*x))])/(a*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4517

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + Dist[2, Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - I*b*E^(I*(c + d*x)))
, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[a^2 - b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos(c+dx)}{a+a\sin(c+dx)}\,dx = -\frac{i(e+fx)^4}{4af} + 2\int \frac{e^{i(c+dx)}(e+fx)^3}{a-iae^{i(c+dx)}}\,dx$$

$$= -\frac{i(e+fx)^4}{4af} + \frac{2(e+fx)^3\log\left(1-ie^{i(c+dx)}\right)}{ad} - \frac{(6f)\int (e+fx)^2\log\left(1-ie^{i(c+dx)}\right)\,dx}{ad}$$

$$= -\frac{i(e+fx)^4}{4af} + \frac{2(e+fx)^3\log\left(1-ie^{i(c+dx)}\right)}{ad} - \frac{6if(e+fx)^2\mathrm{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2} + \frac{\left(12if^2\right.}{}$$

$$= -\frac{i(e+fx)^4}{4af} + \frac{2(e+fx)^3\log\left(1-ie^{i(c+dx)}\right)}{ad} - \frac{6if(e+fx)^2\mathrm{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2} + \frac{12f^2(e}{}$$

$$= -\frac{i(e+fx)^4}{4af} + \frac{2(e+fx)^3\log\left(1-ie^{i(c+dx)}\right)}{ad} - \frac{6if(e+fx)^2\mathrm{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2} + \frac{12f^2(e}{}$$

$$= -\frac{i(e+fx)^4}{4af} + \frac{2(e+fx)^3\log\left(1-ie^{i(c+dx)}\right)}{ad} - \frac{6if(e+fx)^2\mathrm{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2} + \frac{12f^2(e}{}$$

Mathematica [A] time = 1.50, size = 276, normalized size = 1.83

$$\frac{x\left(\cos\left(\frac{c}{2}\right)-\sin\left(\frac{c}{2}\right)\right)\left(4e^3+6e^2fx+4ef^2x^2+f^3x^3\right)}{4a\left(\sin\left(\frac{c}{2}\right)+\cos\left(\frac{c}{2}\right)\right)} - \frac{2(\cos(c)+i\sin(c))\left(\frac{3f(\cos(c)-i\sin(c))(\sin(c)-i\cos(c)+1)\left(d^2(e+fx)^2\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3)*(Cos[c/2] - Sin[c/2]))/(4*a*
(Cos[c/2] + Sin[c/2])) - (2*(Cos[c] + I*Sin[c])*(((e + f*x)^4*(Cos[c] - I*S
in[c]))/(4*f) + (3*f*(d^2*(e + f*x)^2*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c
+ d*x]] - (2*I)*d*f*(e + f*x)*PolyLog[3, (-I)*Cos[c + d*x] - Sin[c + d*x]]
- 2*f^2*PolyLog[4, (-I)*Cos[c + d*x] - Sin[c + d*x]])*(Cos[c] - I*Sin[c])*(
1 - I*Cos[c] + Sin[c]))/d^4 - ((e + f*x)^3*Log[1 + I*Cos[c + d*x] + Sin[c +
 d*x]]*(1 + I*Cos[c] + Sin[c]))/d))/(a*(Cos[c] + I*(1 + Sin[c])))
```

fricas [C] time = 0.50, size = 490, normalized size = 3.25

$$\frac{6if^3\mathrm{polylog}\left(4, i\cos(dx+c)-\sin(dx+c)\right) - 6if^3\mathrm{polylog}\left(4, -i\cos(dx+c)-\sin(dx+c)\right) + \left(-3id^2f^3x^2 - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] (6*I*f^3*polylog(4, I*cos(d*x + c) - sin(d*x + c)) - 6*I*f^3*polylog(4, -I*
cos(d*x + c) - sin(d*x + c)) + (-3*I*d^2*f^3*x^2 - 6*I*d^2*e*f^2*x - 3*I*d^
2*e^2*f)*dilog(I*cos(d*x + c) - sin(d*x + c)) + (3*I*d^2*f^3*x^2 + 6*I*d^2*
e*f^2*x + 3*I*d^2*e^2*f)*dilog(-I*cos(d*x + c) - sin(d*x + c)) + (d^3*e^3 -
 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*log(cos(d*x + c) + I*sin(d*x + c)
 + I) + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*
c^2*d*e*f^2 + c^3*f^3)*log(I*cos(d*x + c) + sin(d*x + c) + 1) + (d^3*f^3*x^
3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f
^3)*log(-I*cos(d*x + c) + sin(d*x + c) + 1) + (d^3*e^3 - 3*c*d^2*e^2*f + 3*
c^2*d*e*f^2 - c^3*f^3)*log(-cos(d*x + c) + I*sin(d*x + c) + I) + 6*(d*f^3*x
 + d*e*f^2)*polylog(3, I*cos(d*x + c) - sin(d*x + c)) + 6*(d*f^3*x + d*e*f^
2)*polylog(3, -I*cos(d*x + c) - sin(d*x + c)))/(a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cos\left(dx+c\right)}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cos(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.27, size = 679, normalized size = 4.50

$$\frac{ie^{3}x}{a}-\frac{2\ln\left(e^{i(dx+c)}\right)e^{3}}{da}+\frac{2\ln\left(e^{i(dx+c)}+i\right)e^{3}}{da}-\frac{if^{3}x^{4}}{4a}-\frac{6ie^{2}fcx}{da}+\frac{6ic^{2}ef^{2}x}{d^{2}a}-\frac{12ief^{2}\operatorname{polylog}\left(2,ie^{i(dx+c)}\right)x}{d^{2}a}-\frac{6ef^{2}c^{2}\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] I/a*e^3*x+2/d/a*f^3*ln(1-I*exp(I*(d*x+c)))*x^3-6/d^3/a*e*f^2*c^2*ln(1-I*exp
(I*(d*x+c)))-6/d^2/a*e^2*f*c*ln(exp(I*(d*x+c))+I)+6/d^3/a*e*f^2*c^2*ln(exp(
I*(d*x+c))+I)+6/d^2/a*e^2*f*c*ln(exp(I*(d*x+c)))-6/d^3/a*e*f^2*c^2*ln(exp(I
*(d*x+c)))+6/d/a*e^2*f*ln(1-I*exp(I*(d*x+c)))*x+6/d^2/a*e^2*f*ln(1-I*exp(I*
(d*x+c)))*c-2/d/a*ln(exp(I*(d*x+c)))*e^3+2/d/a*ln(exp(I*(d*x+c))+I)*e^3-1/4
*I/a*f^3*x^4+6/d/a*e*f^2*ln(1-I*exp(I*(d*x+c)))*x^2-12*I/d^2/a*e*f^2*polylo
g(2,I*exp(I*(d*x+c)))*x-6*I/d/a*e^2*f*c*x+6*I/d^2/a*c^2*e*f^2*x-6*I/d^2/a*f
^3*polylog(2,I*exp(I*(d*x+c)))*x^2+4*I/d^3/a*c^3*e*f^2-3*I/d^2/a*e^2*f*c^2-
6*I/d^2/a*e^2*f*polylog(2,I*exp(I*(d*x+c)))-2*I/d^3/a*f^3*c^3*x+2/d^4/a*f^3
*c^3*ln(1-I*exp(I*(d*x+c)))+12/d^3/a*f^3*polylog(3,I*exp(I*(d*x+c)))*x+2/d^
4/a*f^3*c^3*ln(exp(I*(d*x+c)))-2/d^4/a*f^3*c^3*ln(exp(I*(d*x+c))+I)+12/d^3/
```

```
a*e*f^2*polylog(3,I*exp(I*(d*x+c)))-3/2*I/d^4/a*f^3*c^4-I/a*e*f^2*x^3-3/2*I
/a*e^2*f*x^2+12*I*f^3*polylog(4,I*exp(I*(d*x+c)))/a/d^4
```

maxima [B] time = 1.23, size = 510, normalized size = 3.38

$$-\frac{\frac{12\,ce^{2}f\log(ad\sin(dx+c)+ad)}{ad}-\frac{4\,e^{3}\log(a\sin(dx+c)+a)}{a}-\frac{-i\,(dx+c)^{4}f^{3}+\left(-4i\,def^{2}+4i\,cf^{3}\right)(dx+c)^{3}+48i\,f^{3}\mathrm{Li}_{4}(i\,e^{(i\,dx+i\,c)})+\left(-6i\,d^{2}e^{2}f+12i\,cdef^{2}\cdots\right.}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/4*(12*c*e^2*f*log(a*d*sin(d*x + c) + a*d)/(a*d) - 4*e^3*log(a*sin(d*x +
c) + a)/a - (-I*(d*x + c)^4*f^3 + (-4*I*d*e*f^2 + 4*I*c*f^3)*(d*x + c)^3 +
48*I*f^3*polylog(4, I*e^(I*d*x + I*c)) + (-6*I*d^2*e^2*f + 12*I*c*d*e*f^2 -
 6*I*c^2*f^3)*(d*x + c)^2 + (-12*I*c^2*d*e*f^2 + 4*I*c^3*f^3)*(d*x + c) + (
24*I*c^2*d*e*f^2 - 8*I*c^3*f^3)*arctan2(sin(d*x + c) + 1, cos(d*x + c)) + (
-8*I*(d*x + c)^3*f^3 + (-24*I*d*e*f^2 + 24*I*c*f^3)*(d*x + c)^2 + (-24*I*d^
2*e^2*f + 48*I*c*d*e*f^2 - 24*I*c^2*f^3)*(d*x + c))*arctan2(cos(d*x + c), s
in(d*x + c) + 1) + (-24*I*d^2*e^2*f + 48*I*c*d*e*f^2 - 24*I*(d*x + c)^2*f^3
 - 24*I*c^2*f^3 + (-48*I*d*e*f^2 + 48*I*c*f^3)*(d*x + c))*dilog(I*e^(I*d*x
+ I*c)) + 4*(3*c^2*d*e*f^2 + (d*x + c)^3*f^3 - c^3*f^3 + 3*(d*e*f^2 - c*f^3
)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*(d*x + c))*log(cos(d*
x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) + 48*(d*e*f^2 + (d*x + c)*f
^3 - c*f^3)*polylog(3, I*e^(I*d*x + I*c)))/(a*d^3))/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cos\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{a+a\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x)^3)/(a + a*sin(c + d*x)),x)
```

```
[Out] int((cos(c + d*x)*(e + f*x)^3)/(a + a*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^{3}\cos\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx+\int \frac{f^{3}x^{3}\cos\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx+\int \frac{3ef^{2}x^{2}\cos\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx+\int \frac{3e^{2}fx\cos\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**3*cos(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f**3*x**3*cos
(c + d*x)/(sin(c + d*x) + 1), x) + Integral(3*e*f**2*x**2*cos(c + d*x)/(sin
(c + d*x) + 1), x) + Integral(3*e**2*f*x*cos(c + d*x)/(sin(c + d*x) + 1), x
))/a
```

3.252 $\int \frac{(e+fx)^2\cos(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=114

$$\frac{4f^2\mathrm{Li}_3\left(ie^{i(c+dx)}\right)}{ad^3}-\frac{4if(e+fx)\mathrm{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2}+\frac{2(e+fx)^2\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{i(e+fx)^3}{3af}$$

```
[Out] -1/3*I*(f*x+e)^3/a/f+2*(f*x+e)^2*ln(1-I*exp(I*(d*x+c)))/a/d-4*I*f*(f*x+e)*p
olylog(2,I*exp(I*(d*x+c)))/a/d^2+4*f^2*polylog(3,I*exp(I*(d*x+c)))/a/d^3
```

Rubi [A] time = 0.21, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4517, 2190, 2531, 2282, 6589}

$$-\frac{4if(e+fx)\mathrm{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^2}+\frac{4f^2\mathrm{PolyLog}\left(3,ie^{i(c+dx)}\right)}{ad^3}+\frac{2(e+fx)^2\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{i(e+fx)^3}{3af}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-I/3)*(e + f*x)^3)/(a*f) + (2*(e + f*x)^2*Log[1 - I*E^(I*(c + d*x))])/(a*
d) - ((4*I)*f*(e + f*x)*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^2) + (4*f^2*Pol
yLog[3, I*E^(I*(c + d*x))])/(a*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4517

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + Dist[2, Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - I*b*E^(I*(c + d*x)))
, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[a^2 - b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos(c+dx)}{a+a\sin(c+dx)}\,dx = -\frac{i(e+fx)^3}{3af}+2\int \frac{e^{i(c+dx)}(e+fx)^2}{a-iae^{i(c+dx)}}\,dx$$

$$= -\frac{i(e+fx)^3}{3af}+\frac{2(e+fx)^2\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{(4f)\int(e+fx)\log\left(1-ie^{i(c+dx)}\right)dx}{ad}$$

$$= -\frac{i(e+fx)^3}{3af}+\frac{2(e+fx)^2\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{4if(e+fx)\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2}+\frac{\left(4if^2\right)\int}{}$$

$$= -\frac{i(e+fx)^3}{3af}+\frac{2(e+fx)^2\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{4if(e+fx)\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2}+\frac{\left(4f^2\right)\text{Sul}}{}$$

$$= -\frac{i(e+fx)^3}{3af}+\frac{2(e+fx)^2\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{4if(e+fx)\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2}+\frac{4f^2\text{Li}_3\left(i\right.}{ad^3}$$

Mathematica [A] time = 1.05, size = 221, normalized size = 1.94

$$\frac{x\left(\cos\left(\frac{c}{2}\right)-\sin\left(\frac{c}{2}\right)\right)\left(3e^2+3efx+f^2x^2\right)}{3a\left(\sin\left(\frac{c}{2}\right)+\cos\left(\frac{c}{2}\right)\right)}-\frac{2(\cos(c)+i\sin(c))\left(\frac{2f(\cos(c)-i(\sin(c)+1))(d(e+fx)\text{Li}_2(-i\cos(c+dx)-\sin(c+dx))-if\text{L}}{d^3}\right.}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (x*(3*e^2 + 3*e*f*x + f^2*x^2)*(Cos[c/2] - Sin[c/2]))/(3*a*(Cos[c/2] + Sin[
c/2])) - (2*(Cos[c] + I*Sin[c])*(((e + f*x)^3*(Cos[c] - I*Sin[c]))/(3*f) -
((e + f*x)^2*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(1 + I*Cos[c] + Sin[c])
)/d + (2*f*(d*(e + f*x)*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*x]] - I*f*
PolyLog[3, (-I)*Cos[c + d*x] - Sin[c + d*x]])*(Cos[c] - I*(1 + Sin[c])))/d^
3))/(a*(Cos[c] + I*(1 + Sin[c])))
```

fricas [C] time = 0.46, size = 302, normalized size = 2.65

$$\frac{2 f^2\text{polylog}\left(3, i \cos(dx+c) - \sin(dx+c)\right) + 2 f^2\text{polylog}\left(3, -i \cos(dx+c) - \sin(dx+c)\right) + \left(-2i\,df^2x - 2i\,\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] (2*f^2*polylog(3, I*cos(d*x + c) - sin(d*x + c)) + 2*f^2*polylog(3, -I*cos(
d*x + c) - sin(d*x + c)) + (-2*I*d*f^2*x - 2*I*d*e*f)*dilog(I*cos(d*x + c)
- sin(d*x + c)) + (2*I*d*f^2*x + 2*I*d*e*f)*dilog(-I*cos(d*x + c) - sin(d*x
 + c)) + (d^2*e^2 - 2*c*d*e*f + c^2*f^2)*log(cos(d*x + c) + I*sin(d*x + c)
+ I) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*log(I*cos(d*x + c)
 + sin(d*x + c) + 1) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*lo
g(-I*cos(d*x + c) + sin(d*x + c) + 1) + (d^2*e^2 - 2*c*d*e*f + c^2*f^2)*log
(-cos(d*x + c) + I*sin(d*x + c) + I))/(a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\cos\left(dx+c\right)}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cos(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.22, size = 421, normalized size = 3.69

$$\frac{ie^2x}{a}+\frac{2if^2c^2x}{d^2a}-\frac{ifex^2}{a}+\frac{2\ln\left(e^{i(dx+c)}+i\right)e^2}{da}-\frac{2\ln\left(e^{i(dx+c)}\right)e^2}{da}+\frac{4fe\ln\left(1-ie^{i(dx+c)}\right)x}{da}+\frac{4fe\ln\left(1-ie^{i(dx+c)}\right)c}{d^2a}-\frac{4j}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] I/a*e^2*x+2*I/d^2/a*f^2*c^2*x-4*I/d^2/a*f*e*polylog(2,I*exp(I*(d*x+c)))+2/d
/a*ln(exp(I*(d*x+c))+I)*e^2-2/d/a*ln(exp(I*(d*x+c)))*e^2+4/d/a*f*e*ln(1-I*e
```

```
xp(I*(d*x+c)))*x+4/d^2/a*f*e*ln(1-I*exp(I*(d*x+c)))*c-4/d^2/a*f*e*c*ln(exp(
I*(d*x+c))+I)-I/a*f*e*x^2+2/d/a*f^2*ln(1-I*exp(I*(d*x+c)))*x^2-2/d^3/a*f^2*
ln(1-I*exp(I*(d*x+c)))*c^2+4/3*I/d^3/a*f^2*c^3-2*I/d^2/a*e*f*c^2-1/3*I/a*f^
2*x^3+4/d^2/a*f*e*c*ln(exp(I*(d*x+c)))-2/d^3/a*f^2*c^2*ln(exp(I*(d*x+c)))+2
/d^3/a*f^2*c^2*ln(exp(I*(d*x+c))+I)-4*I/d^2/a*f^2*polylog(2,I*exp(I*(d*x+c)
))*x-4*I/d/a*e*f*c*x+4*f^2*polylog(3,I*exp(I*(d*x+c)))/a/d^3
```

maxima [B] time = 0.87, size = 293, normalized size = 2.57

$$-\frac{\frac{6\,cef\log(ad\sin(dx+c)+ad)}{ad}-\frac{3\,e^2\log(a\sin(dx+c)+a)}{a}-\frac{-i\,(dx+c)^3f^2-3i\,(dx+c)c^2f^2+6i\,c^2f^2\arctan(\sin(dx+c)+1,\cos(dx+c))+\left(-3i\,def+3i\,cf^2\right)(dx}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/3*(6*c*e*f*log(a*d*sin(d*x + c) + a*d)/(a*d) - 3*e^2*log(a*sin(d*x + c)
+ a)/a - (-I*(d*x + c)^3*f^2 - 3*I*(d*x + c)*c^2*f^2 + 6*I*c^2*f^2*arctan2(
sin(d*x + c) + 1, cos(d*x + c)) + (-3*I*d*e*f + 3*I*c*f^2)*(d*x + c)^2 + 12
*f^2*polylog(3, I*e^(I*d*x + I*c)) + (-6*I*(d*x + c)^2*f^2 + (-12*I*d*e*f +
 12*I*c*f^2)*(d*x + c))*arctan2(cos(d*x + c), sin(d*x + c) + 1) + (-12*I*d*
e*f - 12*I*(d*x + c)*f^2 + 12*I*c*f^2)*dilog(I*e^(I*d*x + I*c)) + 3*((d*x +
 c)^2*f^2 + c^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*log(cos(d*x + c)^2 + sin
(d*x + c)^2 + 2*sin(d*x + c) + 1))/(a*d^2))/d
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cos\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{a+a\,\sin\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x)^2)/(a + a*sin(c + d*x)),x)
```

```
[Out] int((cos(c + d*x)*(e + f*x)^2)/(a + a*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^{2} \cos{\left(c + d x \right)}}{\sin{\left(c + d x \right)} + 1}\, dx + \int \frac{f^{2} x^{2} \cos{\left(c + d x \right)}}{\sin{\left(c + d x \right)} + 1}\, dx + \int \frac{2 e f x \cos{\left(c + d x \right)}}{\sin{\left(c + d x \right)} + 1}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**2*cos(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f**2*x**2*cos
(c + d*x)/(sin(c + d*x) + 1), x) + Integral(2*e*f*x*cos(c + d*x)/(sin(c + d
*x) + 1), x))/a
```

3.253 $\int \frac{(e+fx)\cos(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=79

$$-\frac{2if\,\mathrm{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2}+\frac{2(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{i(e+fx)^2}{2af}$$

```
[Out] -1/2*I*(f*x+e)^2/a/f+2*(f*x+e)*ln(1-I*exp(I*(d*x+c)))/a/d-2*I*f*polylog(2,I
*exp(I*(d*x+c)))/a/d^2
```

Rubi [A] time = 0.13, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4517, 2190, 2279, 2391}

$$-\frac{2if\,\mathrm{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^2}+\frac{2(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{i(e+fx)^2}{2af}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-I/2)*(e + f*x)^2)/(a*f) + (2*(e + f*x)*Log[1 - I*E^(I*(c + d*x))])/(a*d)
 - ((2*I)*f*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4517

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + Dist[2, Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - I*b*E^(I*(c + d*x)))
, x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(e+fx)\cos(c+dx)}{a+a\sin(c+dx)}\,dx &= -\frac{i(e+fx)^2}{2af}+2\int \frac{e^{i(c+dx)}(e+fx)}{a-iae^{i(c+dx)}}\,dx\\ &= -\frac{i(e+fx)^2}{2af}+\frac{2(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{(2f)\int \log\left(1-ie^{i(c+dx)}\right)\,dx}{ad}\\ &= -\frac{i(e+fx)^2}{2af}+\frac{2(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad}+\frac{(2if)\,\text{Subst}\left(\int \frac{\log(1-ix)}{x}\,dx,x,e^{i(c+dx)}\right)}{ad^2}\\ &= -\frac{i(e+fx)^2}{2af}+\frac{2(e+fx)\log\left(1-ie^{i(c+dx)}\right)}{ad}-\frac{2if\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^2}\end{aligned}$$

Mathematica [B] time = 0.57, size = 246, normalized size = 3.11

$$-ic^2f+4de\log\left(\sin\left(\tfrac{1}{2}(c+dx)\right)+\cos\left(\tfrac{1}{2}(c+dx)\right)\right)-4if\text{Li}_2\left(ie^{i(c+dx)}\right)-2icdfx+4cf\log\left(1-ie^{i(c+dx)}\right)+4\pi f\,\text{lo}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cos[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-I)*c^2*f + I*c*f*Pi - (2*I)*c*d*f*x + I*d*f*Pi*x - I*d^2*f*x^2 + 4*f*Pi*
Log[1 + E^((-I)*(c + d*x))] + 4*c*f*Log[1 - I*E^(I*(c + d*x))] + 2*f*Pi*Log
[1 - I*E^(I*(c + d*x))] + 4*d*f*x*Log[1 - I*E^(I*(c + d*x))] - 4*f*Pi*Log[C
os[(c + d*x)/2]] + 4*d*e*Log[Cos[(c + d*x)/2] + Sin[(c + d*x)/2]] - 4*c*f*L
og[Cos[(c + d*x)/2] + Sin[(c + d*x)/2]] - 2*f*Pi*Log[Sin[(2*c + Pi + 2*d*x)
/4]] - (4*I)*f*PolyLog[2, I*E^(I*(c + d*x))])/(2*a*d^2)
```

fricas [B] time = 0.46, size = 156, normalized size = 1.97

$$-i\,f\text{Li}_2\left(i\,\cos\left(dx+c\right)-\sin\left(dx+c\right)\right)+i\,f\text{Li}_2\left(-i\,\cos\left(dx+c\right)-\sin\left(dx+c\right)\right)+\left(de-cf\right)\log\left(\cos\left(dx+c\right)+i\,\text{sin}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] (-I*f*dilog(I*cos(d*x + c) - sin(d*x + c)) + I*f*dilog(-I*cos(d*x + c) - si
n(d*x + c)) + (d*e - c*f)*log(cos(d*x + c) + I*sin(d*x + c) + I) + (d*f*x +
 c*f)*log(I*cos(d*x + c) + sin(d*x + c) + 1) + (d*f*x + c*f)*log(-I*cos(d*x
 + c) + sin(d*x + c) + 1) + (d*e - c*f)*log(-cos(d*x + c) + I*sin(d*x + c)
+ I))/(a*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cos(dx+c)}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cos(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.23, size = 203, normalized size = 2.57

$$-\frac{ifx^2}{2a}+\frac{iex}{a}+\frac{2\ln\left(e^{i(dx+c)}+i\right)e}{da}-\frac{2\ln\left(e^{i(dx+c)}\right)e}{da}-\frac{2ifcx}{da}-\frac{ifc^2}{d^2a}+\frac{2f\ln\left(1-ie^{i(dx+c)}\right)x}{da}+\frac{2f\ln\left(1-ie^{i(dx+c)}\right)c}{d^2a}-\frac{2i}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/2*I/a*f*x^2+I/a*e*x+2/d/a*ln(exp(I*(d*x+c))+I)*e-2/d/a*ln(exp(I*(d*x+c))
)*e-2*I/d/a*f*c*x-I/d^2/a*f*c^2+2/d/a*f*ln(1-I*exp(I*(d*x+c)))*x+2/d^2/a*f*
ln(1-I*exp(I*(d*x+c)))*c-2*I*f*polylog(2,I*exp(I*(d*x+c)))/a/d^2-2/d^2/a*f*
c*ln(exp(I*(d*x+c))+I)+2/d^2/a*f*c*ln(exp(I*(d*x+c)))
```

maxima [A] time = 0.95, size = 116, normalized size = 1.47

$$\frac{-id^2fx^2-2id^2ex-4idfx\arctan(\cos(dx+c),\sin(dx+c)+1)+4ide\arctan(\sin(dx+c)+1,\cos(dx+c))+}{2\,ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(-I*d^2*f*x^2 - 2*I*d^2*e*x - 4*I*d*f*x*arctan2(cos(d*x + c), sin(d*x +
 c) + 1) + 4*I*d*e*arctan2(sin(d*x + c) + 1, cos(d*x + c)) - 4*I*f*dilog(I*
e^(I*d*x + I*c)) + 2*(d*f*x + d*e)*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*
sin(d*x + c) + 1))/(a*d^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cos(c+d\,x)\,\left(e+f\,x\right)}{a+a\,\sin(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x))/(a + a*sin(c + d*x)),x)
```

```
[Out] int((cos(c + d*x)*(e + f*x))/(a + a*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e\cos(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{fx\cos(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e*cos(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f*x*cos(c + d*x)
/(sin(c + d*x) + 1), x))/a
```

3.254 $\int \frac{\cos(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=16

$$\frac{\log(\sin(c+dx)+1)}{ad}$$

```
[Out] ln(1+sin(d*x+c))/a/d
```

Rubi [A] time = 0.03, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2667, 31}

$$\frac{\log(\sin(c+dx)+1)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[c + d*x]/(a + a*Sin[c + d*x]),x]
```

```
[Out] Log[1 + Sin[c + d*x]]/(a*d)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2667

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^(m + (p - 1)/2)*(a - x)
^((p - 1)/2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && In
tegerQ[(p - 1)/2] && EqQ[a^2 - b^2, 0] && (GeQ[p, -1] ||  !IntegerQ[m + 1/2
])
```

Rubi steps

$$\begin{aligned}\int \frac{\cos(c+dx)}{a+a\sin(c+dx)}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{a+x}\,dx, x, a\sin(c+dx)\right)}{ad}\\ &= \frac{\log(1+\sin(c+dx))}{ad}\end{aligned}$$

Mathematica [A] time = 0.01, size = 16, normalized size = 1.00

$$\frac{\log(\sin(c+dx)+1)}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[c + d*x]/(a + a*Sin[c + d*x]),x]
[Out] Log[1 + Sin[c + d*x]]/(a*d)
```

fricas [A] time = 0.44, size = 16, normalized size = 1.00

$$\frac{\log\left(\sin\left(dx+c\right)+1\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] log(sin(d*x + c) + 1)/(a*d)
```

giac [A] time = 1.87, size = 19, normalized size = 1.19

$$\frac{\log\left(|a\sin\left(dx+c\right)+a|\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] log(abs(a*sin(d*x + c) + a))/(a*d)
```

maple [A] time = 0.05, size = 19, normalized size = 1.19

$$\frac{\ln\left(a+a\sin\left(dx+c\right)\right)}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)/(a+a*sin(d*x+c)),x)
[Out] 1/d*ln(a+a*sin(d*x+c))/a
```

maxima [A] time = 0.30, size = 18, normalized size = 1.12

$$\frac{\log\left(a\sin\left(dx+c\right)+a\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] log(a*sin(d*x + c) + a)/(a*d)
```

mupad **[B]** time = 0.05, size = 16, normalized size = 1.00

$$\frac{\ln\left(\sin\left(c+d\,x\right)+1\right)}{a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)/(a + a*sin(c + d*x)),x)
```

```
[Out] log(sin(c + d*x) + 1)/(a*d)
```

sympy **[A]** time = 0.49, size = 24, normalized size = 1.50

$$\begin{cases} \frac{\log\left(\sin\left(c+dx\right)+1\right)}{ad} & \text{for}\ d \neq 0 \\ \frac{x\cos\left(c\right)}{a\sin\left(c\right)+a} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((log(sin(c + d*x) + 1)/(a*d), Ne(d, 0)), (x*cos(c)/(a*sin(c) + a)
, True))
```

3.255 $\int \frac{\cos(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\cos(c+dx)}{(e+fx)(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(cos(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cos(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Cos[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Cos[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\cos(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx = \int \frac{\cos(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 3.25, size = 0, normalized size = 0.00

$$\int \frac{\cos(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cos[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Cos[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cos(dx+c)}{afx+ae+(afx+ae)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(cos(d*x + c)/(a*f*x + a*e + (a*f*x + a*e)*sin(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cos(dx+c)}{(fx+e)(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(cos(d*x + c)/((f*x + e)*(a*sin(d*x + c) + a)), x)
```

maple [A] time = 0.26, size = 0, normalized size = 0.00

$$\int \frac{\cos(dx+c)}{(fx+e)(a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] int(cos(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cos(dx+c)}{(fx+e)(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate(cos(d*x + c)/((f*x + e)*(a*sin(d*x + c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cos(c+d\,x)}{(e+f\,x)\,(a+a\,\sin(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)/((e + f*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] int(cos(c + d*x)/((e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\cos(c+dx)}{e\sin(c+dx)+e+fx\sin(c+dx)+fx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(cos(c + d*x)/(e*sin(c + d*x) + e + f*x*sin(c + d*x) + f*x), x)/a
```

3.256 $\int \frac{\cos(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\cos(c+dx)}{(e+fx)^2(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(cos(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cos(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Cos[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Cos[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\cos(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx=\int \frac{\cos(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 4.44, size = 0, normalized size = 0.00

$$\int \frac{\cos(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Cos[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Cos[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\cos(dx+c)}{af^2x^2+2\,aefx+ae^2+\left(af^2x^2+2\,aefx+ae^2\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(cos(d*x + c)/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2 + 2*a*e*f
*x + a*e^2)*sin(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cos(dx+c)}{(fx+e)^2(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(cos(d*x + c)/((f*x + e)^2*(a*sin(d*x + c) + a)), x)
```

maple [A] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{\cos(dx+c)}{(fx+e)^2(a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int(cos(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cos(dx+c)}{(fx+e)^2(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate(cos(d*x + c)/((f*x + e)^2*(a*sin(d*x + c) + a)), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cos(c+d\,x)}{(e+f\,x)^2\,(a+a\,\sin(c+d\,x))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)/((e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(cos(c + d*x)/((e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\cos(c+dx)}{e^2\sin(c+dx)+e^2+2efx\sin(c+dx)+2efx+f^2x^2\sin(c+dx)+f^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(cos(c + d*x)/(e**2*sin(c + d*x) + e**2 + 2*e*f*x*sin(c + d*x) + 2*
e*f*x + f**2*x**2*sin(c + d*x) + f**2*x**2), x)/a
```

3.257 $\int \frac{(e+fx)^3\cos^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=99

$$\frac{6f^3\sin(c+dx)}{ad^4}-\frac{6f^2(e+fx)\cos(c+dx)}{ad^3}-\frac{3f(e+fx)^2\sin(c+dx)}{ad^2}+\frac{(e+fx)^3\cos(c+dx)}{ad}+\frac{(e+fx)^4}{4af}$$

```
[Out] 1/4*(f*x+e)^4/a/f-6*f^2*(f*x+e)*cos(d*x+c)/a/d^3+(f*x+e)^3*cos(d*x+c)/a/d+6
*f^3*sin(d*x+c)/a/d^4-3*f*(f*x+e)^2*sin(d*x+c)/a/d^2
```

Rubi [A] time = 0.14, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4523, 32, 3296, 2637}

$$-\frac{6f^2(e+fx)\cos(c+dx)}{ad^3}-\frac{3f(e+fx)^2\sin(c+dx)}{ad^2}+\frac{6f^3\sin(c+dx)}{ad^4}+\frac{(e+fx)^3\cos(c+dx)}{ad}+\frac{(e+fx)^4}{4af}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (e + f*x)^4/(4*a*f) - (6*f^2*(e + f*x)*Cos[c + d*x])/(a*d^3) + ((e + f*x)^3
*Cos[c + d*x])/(a*d) + (6*f^3*Sin[c + d*x])/(a*d^4) - (3*f*(e + f*x)^2*Sin[
c + d*x])/(a*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
```

```
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos^2(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\,dx}{a} - \frac{\int (e+fx)^3\sin(c+dx)\,dx}{a}$$
$$= \frac{(e+fx)^4}{4af} + \frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{(3f)\int (e+fx)^2\cos(c+dx)\,dx}{ad}$$
$$= \frac{(e+fx)^4}{4af} + \frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{3f(e+fx)^2\sin(c+dx)}{ad^2} + \frac{\left(6f^2\right)\int (e+fx)\text{s}}{ad^2}$$
$$= \frac{(e+fx)^4}{4af} - \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} + \frac{(e+fx)^3\cos(c+dx)}{ad} - \frac{3f(e+fx)^2\sin(}{ad^2}$$
$$= \frac{(e+fx)^4}{4af} - \frac{6f^2(e+fx)\cos(c+dx)}{ad^3} + \frac{(e+fx)^3\cos(c+dx)}{ad} + \frac{6f^3\sin(c+dx)}{ad^4}$$

Mathematica [A] time = 0.76, size = 102, normalized size = 1.03

$$\frac{-12f\sin(c+dx)\left(d^2(e+fx)^2-2f^2\right)+4d(e+fx)\cos(c+dx)\left(d^2(e+fx)^2-6f^2\right)+d^4x\left(4e^3+6e^2fx+4ef^2x^2\right.}{4ad^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (d^4*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3) + 4*d*(e + f*x)*(-6*f^2
+ d^2*(e + f*x)^2)*Cos[c + d*x] - 12*f*(-2*f^2 + d^2*(e + f*x)^2)*Sin[c + d
*x])/(4*a*d^4)
```

fricas [A] time = 0.46, size = 157, normalized size = 1.59

$$\frac{d^4f^3x^4+4\,d^4ef^2x^3+6\,d^4e^2fx^2+4\,d^4e^3x+4\left(d^3f^3x^3+3\,d^3ef^2x^2+d^3e^3-6\,def^2+3\left(d^3e^2f-2\,df^3\right)x\right)\cos\left(d\right.}{4\,ad^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(d^4*f^3*x^4 + 4*d^4*e*f^2*x^3 + 6*d^4*e^2*f*x^2 + 4*d^4*e^3*x + 4*(d^3
*f^3*x^3 + 3*d^3*e*f^2*x^2 + d^3*e^3 - 6*d*e*f^2 + 3*(d^3*e^2*f - 2*d*f^3)*
```

```
x)*cos(d*x + c) - 12*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f - 2*f^3)*sin(
d*x + c))/(a*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.12, size = 436, normalized size = 4.40

$$-\frac{f^3\left(-(dx+c)^3\cos(dx+c)+3(dx+c)^2\sin(dx+c)-6\sin(dx+c)+6(dx+c)\cos(dx+c)\right)-3cf^3\left(-(dx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/d^4/a*(f^3*(-(d*x+c)^3*cos(d*x+c)+3*(d*x+c)^2*sin(d*x+c)-6*sin(d*x+c)+6*
(d*x+c)*cos(d*x+c))-3*c*f^3*(-(d*x+c)^2*cos(d*x+c)+2*cos(d*x+c)+2*(d*x+c)*s
in(d*x+c))+3*f^2*e*d*(-(d*x+c)^2*cos(d*x+c)+2*cos(d*x+c)+2*(d*x+c)*sin(d*x+
c))+3*c^2*f^3*(sin(d*x+c)-(d*x+c)*cos(d*x+c))-6*c*d*e*f^2*(sin(d*x+c)-(d*x+
c)*cos(d*x+c))+3*d^2*e^2*f*(sin(d*x+c)-(d*x+c)*cos(d*x+c))+c^3*f^3*cos(d*x+
c)-3*c^2*d*e*f^2*cos(d*x+c)+3*c*d^2*e^2*f*cos(d*x+c)-d^3*e^3*cos(d*x+c)-1/4
*f^3*(d*x+c)^4+c*f^3*(d*x+c)^3-f^2*e*d*(d*x+c)^3-3/2*c^2*f^3*(d*x+c)^2+3*c*
d*e*f^2*(d*x+c)^2-3/2*d^2*e^2*f*(d*x+c)^2+c^3*f^3*(d*x+c)-3*c^2*d*e*f^2*(d*
x+c)+3*c*d^2*e^2*f*(d*x+c)-d^3*e^3*(d*x+c))
```

maxima [B] time = 0.73, size = 534, normalized size = 5.39

$$-\frac{8c^3f^3\left(\frac{1}{ad^3+\frac{ad^3\sin(dx+c)^2}{(\cos(dx+c)+1)^2}}+\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{ad^3}\right)-24c^2ef^2\left(\frac{1}{ad^2+\frac{ad^2\sin(dx+c)^2}{(\cos(dx+c)+1)^2}}+\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{ad^2}\right)+24ce^2f\left(\frac{1}{ad+\frac{ad\sin(dx+c)^2}{(\cos(dx+c)+1)^2}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/4*(8*c^3*f^3*(1/(a*d^3 + a*d^3*sin(d*x + c)^2/(cos(d*x + c) + 1)^2) + ar
ctan(sin(d*x + c)/(cos(d*x + c) + 1))/(a*d^3)) - 24*c^2*e*f^2*(1/(a*d^2 + a
*d^2*sin(d*x + c)^2/(cos(d*x + c) + 1)^2) + arctan(sin(d*x + c)/(cos(d*x +
```

```
c) + 1))/(a*d^2)) + 24*c*e^2*f*(1/(a*d + a*d*sin(d*x + c)^2/(cos(d*x + c) +
 1)^2) + arctan(sin(d*x + c)/(cos(d*x + c) + 1))/(a*d)) - 8*e^3*(arctan(sin
(d*x + c)/(cos(d*x + c) + 1))/a + 1/(a + a*sin(d*x + c)^2/(cos(d*x + c) + 1
)^2)) - 6*((d*x + c)^2 + 2*(d*x + c)*cos(d*x + c) - 2*sin(d*x + c))*e^2*f/(
a*d) + 12*((d*x + c)^2 + 2*(d*x + c)*cos(d*x + c) - 2*sin(d*x + c))*c*e*f^2
/(a*d^2) - 6*((d*x + c)^2 + 2*(d*x + c)*cos(d*x + c) - 2*sin(d*x + c))*c^2*
f^3/(a*d^3) - 4*((d*x + c)^3 + 3*((d*x + c)^2 - 2)*cos(d*x + c) - 6*(d*x +
c)*sin(d*x + c))*e*f^2/(a*d^2) + 4*((d*x + c)^3 + 3*((d*x + c)^2 - 2)*cos(d
*x + c) - 6*(d*x + c)*sin(d*x + c))*c*f^3/(a*d^3) - ((d*x + c)^4 + 4*((d*x
+ c)^3 - 6*d*x - 6*c)*cos(d*x + c) - 12*((d*x + c)^2 - 2)*sin(d*x + c))*f^3
/(a*d^3))/d
```

mupad [B] time = 3.02, size = 184, normalized size = 1.86

$$\frac{e^3\,x+\frac{3\,e^2\,f\,x^2}{2}+e\,f^2\,x^3+\frac{f^3\,x^4}{4}}{a}-\frac{d\,\left(6\,x\,\cos\left(c+d\,x\right)\,f^3+6\,e\,\cos\left(c+d\,x\right)\,f^2\right)+d^2\,\left(3\,f^3\,x^2\,\sin\left(c+d\,x\right)+3\,e^2\,f$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*(e + f*x)^3)/(a + a*sin(c + d*x)),x)
```

```
[Out] (e^3*x + (f^3*x^4)/4 + (3*e^2*f*x^2)/2 + e*f^2*x^3)/a - (d*(6*e*f^2*cos(c +
 d*x) + 6*f^3*x*cos(c + d*x)) + d^2*(3*f^3*x^2*sin(c + d*x) + 3*e^2*f*sin(c
 + d*x) + 6*e*f^2*x*sin(c + d*x)) - d^3*(e^3*cos(c + d*x) + f^3*x^3*cos(c +
 d*x) + 3*e^2*f*x*cos(c + d*x) + 3*e*f^2*x^2*cos(c + d*x)) - 6*f^3*sin(c +
d*x))/(a*d^4)
```

sympy [A] time = 10.04, size = 984, normalized size = 9.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((4*d**4*e**3*x*tan(c/2 + d*x/2)**2/(4*a*d**4*tan(c/2 + d*x/2)**2
+ 4*a*d**4) + 4*d**4*e**3*x/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**4) + 6*d
**4*e**2*f*x**2*tan(c/2 + d*x/2)**2/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**
4) + 6*d**4*e**2*f*x**2/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**4) + 4*d**4*
e*f**2*x**3*tan(c/2 + d*x/2)**2/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**4) +
 4*d**4*e*f**2*x**3/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**4) + d**4*f**3*x
**4*tan(c/2 + d*x/2)**2/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**4) + d**4*f*
*3*x**4/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**4) + 8*d**3*e**3/(4*a*d**4*t
an(c/2 + d*x/2)**2 + 4*a*d**4) - 12*d**3*e**2*f*x*tan(c/2 + d*x/2)**2/(4*a*
d**4*tan(c/2 + d*x/2)**2 + 4*a*d**4) + 12*d**3*e**2*f*x/(4*a*d**4*tan(c/2 +
 d*x/2)**2 + 4*a*d**4) - 12*d**3*e*f**2*x**2*tan(c/2 + d*x/2)**2/(4*a*d**4*
```

```
tan(c/2 + d*x/2)**2 + 4*a*d**4) + 12*d**3*e*f**2*x**2/(4*a*d**4*tan(c/2 + d
*x/2)**2 + 4*a*d**4) - 4*d**3*f**3*x**3*tan(c/2 + d*x/2)**2/(4*a*d**4*tan(c
/2 + d*x/2)**2 + 4*a*d**4) + 4*d**3*f**3*x**3/(4*a*d**4*tan(c/2 + d*x/2)**2
 + 4*a*d**4) - 24*d**2*e**2*f*tan(c/2 + d*x/2)/(4*a*d**4*tan(c/2 + d*x/2)**
2 + 4*a*d**4) - 48*d**2*e*f**2*x*tan(c/2 + d*x/2)/(4*a*d**4*tan(c/2 + d*x/2
)**2 + 4*a*d**4) - 24*d**2*f**3*x**2*tan(c/2 + d*x/2)/(4*a*d**4*tan(c/2 + d
*x/2)**2 + 4*a*d**4) - 48*d*e*f**2/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**4
) + 24*d*f**3*x*tan(c/2 + d*x/2)**2/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**
4) - 24*d*f**3*x/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**4) + 48*f**3*tan(c/
2 + d*x/2)/(4*a*d**4*tan(c/2 + d*x/2)**2 + 4*a*d**4), Ne(d, 0)), ((e**3*x +
 3*e**2*f*x**2/2 + e*f**2*x**3 + f**3*x**4/4)*cos(c)**2/(a*sin(c) + a), Tru
e))
```

3.258 $\int \frac{(e+fx)^2\cos^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=75

$$-\frac{2f^2\cos(c+dx)}{ad^3}-\frac{2f(e+fx)\sin(c+dx)}{ad^2}+\frac{(e+fx)^2\cos(c+dx)}{ad}+\frac{(e+fx)^3}{3af}$$

```
[Out] 1/3*(f*x+e)^3/a/f-2*f^2*cos(d*x+c)/a/d^3+(f*x+e)^2*cos(d*x+c)/a/d-2*f*(f*x+
e)*sin(d*x+c)/a/d^2
```

Rubi [A] time = 0.11, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4523, 32, 3296, 2638}

$$-\frac{2f(e+fx)\sin(c+dx)}{ad^2}-\frac{2f^2\cos(c+dx)}{ad^3}+\frac{(e+fx)^2\cos(c+dx)}{ad}+\frac{(e+fx)^3}{3af}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (e + f*x)^3/(3*a*f) - (2*f^2*Cos[c + d*x])/(a*d^3) + ((e + f*x)^2*Cos[c + d
*x])/(a*d) - (2*f*(e + f*x)*Sin[c + d*x])/(a*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
```

```
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(e+fx)^2\cos^2(c+dx)}{a+a\sin(c+dx)}\,dx &= \frac{\int (e+fx)^2\,dx}{a} - \frac{\int (e+fx)^2\sin(c+dx)\,dx}{a} \\
&= \frac{(e+fx)^3}{3af} + \frac{(e+fx)^2\cos(c+dx)}{ad} - \frac{(2f)\int (e+fx)\cos(c+dx)\,dx}{ad} \\
&= \frac{(e+fx)^3}{3af} + \frac{(e+fx)^2\cos(c+dx)}{ad} - \frac{2f(e+fx)\sin(c+dx)}{ad^2} + \frac{\left(2f^2\right)\int \sin(c+dx)}{ad^2} \\
&= \frac{(e+fx)^3}{3af} - \frac{2f^2\cos(c+dx)}{ad^3} + \frac{(e+fx)^2\cos(c+dx)}{ad} - \frac{2f(e+fx)\sin(c+dx)}{ad^2}
\end{aligned}
$$

Mathematica [A] time = 0.47, size = 74, normalized size = 0.99

$$
\frac{3\cos(c+dx)\left(d^2(e+fx)^2-2f^2\right)-6df(e+fx)\sin(c+dx)+d^3x\left(3e^2+3efx+f^2x^2\right)}{3ad^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (d^3*x*(3*e^2 + 3*e*f*x + f^2*x^2) + 3*(-2*f^2 + d^2*(e + f*x)^2)*Cos[c + d
*x] - 6*d*f*(e + f*x)*Sin[c + d*x])/(3*a*d^3)
```

fricas [A] time = 0.44, size = 96, normalized size = 1.28

$$
\frac{d^3f^2x^3+3\,d^3efx^2+3\,d^3e^2x+3\left(d^2f^2x^2+2\,d^2efx+d^2e^2-2\,f^2\right)\cos\left(dx+c\right)-6\left(df^2x+def\right)\sin\left(dx+c\right)}{3\,ad^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/3*(d^3*f^2*x^3 + 3*d^3*e*f*x^2 + 3*d^3*e^2*x + 3*(d^2*f^2*x^2 + 2*d^2*e*f
*x + d^2*e^2 - 2*f^2)*cos(d*x + c) - 6*(d*f^2*x + d*e*f)*sin(d*x + c))/(a*d
^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.12, size = 215, normalized size = 2.87

$$-\frac{f^2\left(-(dx+c)^2\cos(dx+c)+2\cos(dx+c)+2(dx+c)\sin(dx+c)\right)-2cf^2\left(\sin(dx+c)-(dx+c)\cos(dx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/d^3/a*(f^2*(-(d*x+c)^2*cos(d*x+c)+2*cos(d*x+c)+2*(d*x+c)*sin(d*x+c))-2*c
*f^2*(sin(d*x+c)-(d*x+c)*cos(d*x+c))+2*d*e*f*(sin(d*x+c)-(d*x+c)*cos(d*x+c)
)-c^2*f^2*cos(d*x+c)+2*c*d*e*f*cos(d*x+c)-d^2*e^2*cos(d*x+c)-1/3*f^2*(d*x+c
)^3+c*f^2*(d*x+c)^2-d*e*f*(d*x+c)^2-c^2*f^2*(d*x+c)+2*c*d*e*f*(d*x+c)-d^2*e
^2*(d*x+c))
```

maxima [B] time = 0.73, size = 309, normalized size = 4.12

$$\frac{6\,c^2f^2\left(\frac{1}{ad^2+\frac{ad^2\sin(dx+c)^2}{(\cos(dx+c)+1)^2}}+\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{ad^2}\right)-12\,cef\left(\frac{1}{ad+\frac{ad\sin(dx+c)^2}{(\cos(dx+c)+1)^2}}+\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{ad}\right)+6\,e^2\left(\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{a}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/3*(6*c^2*f^2*(1/(a*d^2 + a*d^2*sin(d*x + c)^2/(cos(d*x + c) + 1)^2) + arc
tan(sin(d*x + c)/(cos(d*x + c) + 1))/(a*d^2)) - 12*c*e*f*(1/(a*d + a*d*sin(
d*x + c)^2/(cos(d*x + c) + 1)^2) + arctan(sin(d*x + c)/(cos(d*x + c) + 1))/
(a*d)) + 6*e^2*(arctan(sin(d*x + c)/(cos(d*x + c) + 1))/a + 1/(a + a*sin(d*
x + c)^2/(cos(d*x + c) + 1)^2)) + 3*((d*x + c)^2 + 2*(d*x + c)*cos(d*x + c)
 - 2*sin(d*x + c))*e*f/(a*d) - 3*((d*x + c)^2 + 2*(d*x + c)*cos(d*x + c) -
2*sin(d*x + c))*c*f^2/(a*d^2) + ((d*x + c)^3 + 3*((d*x + c)^2 - 2)*cos(d*x
+ c) - 6*(d*x + c)*sin(d*x + c))*f^2/(a*d^2))/d
```

mupad [B] time = 2.96, size = 110, normalized size = 1.47

$$\frac{e^2\,x+e\,f\,x^2+\frac{f^2\,x^3}{3}}{a}-\frac{2\,f^2\,\cos(c+d\,x)-d^2\,\left(e^2\,\cos(c+d\,x)+f^2\,x^2\,\cos(c+d\,x)+2\,e\,f\,x\,\cos(c+d\,x)\right)+d\,\left(2\right.}{a\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*(e + f*x)^2)/(a + a*sin(c + d*x)),x)
```

```
[Out] (e^2*x + (f^2*x^3)/3 + e*f*x^2)/a - (2*f^2*cos(c + d*x) - d^2*(e^2*cos(c +
d*x) + f^2*x^2*cos(c + d*x) + 2*e*f*x*cos(c + d*x)) + d*(2*f^2*x*sin(c + d*
x) + 2*e*f*sin(c + d*x)))/(a*d^3)
```

sympy [**A**] time = 6.55, size = 605, normalized size = 8.07

$$\begin{cases} \frac{3d^3e^2x\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)}{3ad^3\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+3ad^3} + \frac{3d^3e^2x}{3ad^3\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+3ad^3} + \frac{3d^3efx^2\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)}{3ad^3\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+3ad^3} + \frac{3d^3efx^2}{3ad^3\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+3ad^3} + \frac{d^3f^2x^3\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)}{3ad^3\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+3ad^3} + \frac{\cdots}{3ad^3 \cdots} \\ \frac{\left(e^2x+efx^2+\frac{f^2x^3}{3}\right)\cos^2(c)}{a\sin(c)+a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((3*d**3*e**2*x*tan(c/2 + d*x/2)**2/(3*a*d**3*tan(c/2 + d*x/2)**2
+ 3*a*d**3) + 3*d**3*e**2*x/(3*a*d**3*tan(c/2 + d*x/2)**2 + 3*a*d**3) + 3*d
**3*e*f*x**2*tan(c/2 + d*x/2)**2/(3*a*d**3*tan(c/2 + d*x/2)**2 + 3*a*d**3)
+ 3*d**3*e*f*x**2/(3*a*d**3*tan(c/2 + d*x/2)**2 + 3*a*d**3) + d**3*f**2*x**
3*tan(c/2 + d*x/2)**2/(3*a*d**3*tan(c/2 + d*x/2)**2 + 3*a*d**3) + d**3*f**2
*x**3/(3*a*d**3*tan(c/2 + d*x/2)**2 + 3*a*d**3) + 6*d**2*e**2/(3*a*d**3*tan
(c/2 + d*x/2)**2 + 3*a*d**3) - 6*d**2*e*f*x*tan(c/2 + d*x/2)**2/(3*a*d**3*t
an(c/2 + d*x/2)**2 + 3*a*d**3) + 6*d**2*e*f*x/(3*a*d**3*tan(c/2 + d*x/2)**2
 + 3*a*d**3) - 3*d**2*f**2*x**2*tan(c/2 + d*x/2)**2/(3*a*d**3*tan(c/2 + d*x
/2)**2 + 3*a*d**3) + 3*d**2*f**2*x**2/(3*a*d**3*tan(c/2 + d*x/2)**2 + 3*a*d
**3) - 12*d*e*f*tan(c/2 + d*x/2)/(3*a*d**3*tan(c/2 + d*x/2)**2 + 3*a*d**3)
- 12*d*f**2*x*tan(c/2 + d*x/2)/(3*a*d**3*tan(c/2 + d*x/2)**2 + 3*a*d**3) -
12*f**2/(3*a*d**3*tan(c/2 + d*x/2)**2 + 3*a*d**3), Ne(d, 0)), ((e**2*x + e*
f*x**2 + f**2*x**3/3)*cos(c)**2/(a*sin(c) + a), True))
```

3.259 $\int \frac{(e+fx)\cos^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=51

$$-\frac{f\sin(c+dx)}{ad^2}+\frac{(e+fx)\cos(c+dx)}{ad}+\frac{ex}{a}+\frac{fx^2}{2a}$$

```
[Out] e*x/a+1/2*f*x^2/a+(f*x+e)*cos(d*x+c)/a/d-f*sin(d*x+c)/a/d^2
```

Rubi [A] time = 0.06, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {4523, 3296, 2637}

$$-\frac{f\sin(c+dx)}{ad^2}+\frac{(e+fx)\cos(c+dx)}{ad}+\frac{ex}{a}+\frac{fx^2}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (e*x)/a + (f*x^2)/(2*a) + ((e + f*x)*Cos[c + d*x])/(a*d) - (f*Sin[c + d*x])
/(a*d^2)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cos^2(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)\,dx}{a} - \frac{\int (e+fx)\sin(c+dx)\,dx}{a}$$
$$= \frac{ex}{a} + \frac{fx^2}{2a} + \frac{(e+fx)\cos(c+dx)}{ad} - \frac{f\int \cos(c+dx)\,dx}{ad}$$
$$= \frac{ex}{a} + \frac{fx^2}{2a} + \frac{(e+fx)\cos(c+dx)}{ad} - \frac{f\sin(c+dx)}{ad^2}$$

Mathematica [A] time = 0.54, size = 53, normalized size = 1.04

$$-\frac{(c+dx)(cf-2de-dfx)-2d(e+fx)\cos(c+dx)+2f\sin(c+dx)}{2ad^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cos[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
[Out] -1/2*((c + d*x)*(-2*d*e + c*f - d*f*x) - 2*d*(e + f*x)*Cos[c + d*x] + 2*f*S
in[c + d*x])/(a*d^2)
```

fricas [A] time = 0.45, size = 49, normalized size = 0.96

$$\frac{d^2fx^2 + 2\,d^2ex + 2\left(dfx + de\right)\cos\left(dx+c\right) - 2\,f\sin\left(dx+c\right)}{2\,ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] 1/2*(d^2*f*x^2 + 2*d^2*e*x + 2*(d*f*x + d*e)*cos(d*x + c) - 2*f*sin(d*x + c
))/(a*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [A] time = 0.12, size = 78, normalized size = 1.53

$$-\frac{f\left(\sin\left(dx+c\right)-\left(dx+c\right)\cos\left(dx+c\right)\right)+cf\cos\left(dx+c\right)-de\cos\left(dx+c\right)-\frac{f\left(dx+c\right)^2}{2}+cf\left(dx+c\right)-de\left(dx+c\right)}{d^2a}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f*x+e)*cos(d*x+c)^2/(a+a*sin(d*x+c)),x)

[Out] -1/d^2/a*(f*(sin(d*x+c)-(d*x+c)*cos(d*x+c))+c*f*cos(d*x+c)-d*e*cos(d*x+c)-1/2*f*(d*x+c)^2+c*f*(d*x+c)-d*e*(d*x+c))

maxima [B] time = 0.95, size = 151, normalized size = 2.96

$$-\frac{4\,cf\left(\frac{1}{ad+\frac{ad\sin(dx+c)^2}{(\cos(dx+c)+1)^2}}+\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{ad}\right)-4\,e\left(\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{a}+\frac{1}{a+\frac{a\sin(dx+c)^2}{(\cos(dx+c)+1)^2}}\right)-\frac{\left((dx+c)^2+2\,(dx+c)\cos(dx+c)-2\,\sin(dx+\ldots}{ad}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")

[Out] -1/2*(4*c*f*(1/(a*d + a*d*sin(d*x + c)^2/(cos(d*x + c) + 1)^2) + arctan(sin(d*x + c)/(cos(d*x + c) + 1))/(a*d)) - 4*e*(arctan(sin(d*x + c)/(cos(d*x + c) + 1))/a + 1/(a + a*sin(d*x + c)^2/(cos(d*x + c) + 1)^2)) - ((d*x + c)^2 + 2*(d*x + c)*cos(d*x + c) - 2*sin(d*x + c))*f/(a*d))/d

mupad [B] time = 2.94, size = 53, normalized size = 1.04

$$\frac{\frac{f\,x^2}{2}+e\,x}{a}-\frac{f\,\sin\left(c+d\,x\right)-d\,\left(e\,\cos\left(c+d\,x\right)+f\,x\,\cos\left(c+d\,x\right)\right)}{a\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((cos(c + d*x)^2*(e + f*x))/(a + a*sin(c + d*x)),x)

[Out] (e*x + (f*x^2)/2)/a - (f*sin(c + d*x) - d*(e*cos(c + d*x) + f*x*cos(c + d*x)))/(a*d^2)

sympy [A] time = 4.16, size = 326, normalized size = 6.39

$$\begin{cases} \frac{2d^2ex\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)}{2ad^2\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad^2}+\frac{2d^2ex}{2ad^2\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad^2}+\frac{d^2fx^2\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)}{2ad^2\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad^2}+\frac{d^2fx^2}{2ad^2\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad^2}+\frac{4de}{2ad^2\tan^2\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad^2}-\ldots \\ \frac{\left(ex+\frac{fx^2}{2}\right)\cos^2(c)}{a\sin(c)+a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((2*d**2*e*x*tan(c/2 + d*x/2)**2/(2*a*d**2*tan(c/2 + d*x/2)**2 + 2
*a*d**2) + 2*d**2*e*x/(2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2) + d**2*f*x*
*2*tan(c/2 + d*x/2)**2/(2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2) + d**2*f*x
**2/(2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2) + 4*d*e/(2*a*d**2*tan(c/2 + d
*x/2)**2 + 2*a*d**2) - 2*d*f*x*tan(c/2 + d*x/2)**2/(2*a*d**2*tan(c/2 + d*x/
2)**2 + 2*a*d**2) + 2*d*f*x/(2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2) - 4*f
*tan(c/2 + d*x/2)/(2*a*d**2*tan(c/2 + d*x/2)**2 + 2*a*d**2), Ne(d, 0)), ((e
*x + f*x**2/2)*cos(c)**2/(a*sin(c) + a), True))
```

3.260 $\int \frac{\cos^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=19

$$\frac{\cos(c+dx)}{ad}+\frac{x}{a}$$

```
[Out] x/a+cos(d*x+c)/a/d
```

Rubi [A] time = 0.04, antiderivative size = 19, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2682, 8}

$$\frac{\cos(c+dx)}{ad}+\frac{x}{a}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[c + d*x]^2/(a + a*Sin[c + d*x]),x]
```

```
[Out] x/a + Cos[c + d*x]/(a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2682

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)]), x_Symbol] :> Simp[(g*(g*Cos[e + f*x])^(p - 1))/(b*f*(p - 1)), x] + Di
st[g^2/a, Int[(g*Cos[e + f*x])^(p - 2), x], x] /; FreeQ[{a, b, e, f, g}, x]
 && EqQ[a^2 - b^2, 0] && GtQ[p, 1] && IntegerQ[2*p]
```

Rubi steps

$$\begin{aligned}\int \frac{\cos^2(c+dx)}{a+a\sin(c+dx)}\,dx &= \frac{\cos(c+dx)}{ad}+\frac{\int 1\,dx}{a}\\ &= \frac{x}{a}+\frac{\cos(c+dx)}{ad}\end{aligned}$$

Mathematica [B] time = 0.15, size = 97, normalized size = 5.11

$$-\frac{\left(2\sqrt{1-\sin(c+dx)}\,\sin^{-1}\left(\frac{\sqrt{1-\sin(c+dx)}}{\sqrt{2}}\right)+(\sin(c+dx)-1)\sqrt{\sin(c+dx)+1}\right)\cos^3(c+dx)}{ad(\sin(c+dx)-1)^2(\sin(c+dx)+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[c + d*x]^2/(a + a*Sin[c + d*x]),x]
```

```
[Out] -((Cos[c + d*x]^3*(2*ArcSin[Sqrt[1 - Sin[c + d*x]]/Sqrt[2]]*Sqrt[1 - Sin[c
+ d*x]] + (-1 + Sin[c + d*x])*Sqrt[1 + Sin[c + d*x]]))/(a*d*(-1 + Sin[c + d
*x])^2*(1 + Sin[c + d*x])^(3/2)))
```

fricas [A] time = 0.43, size = 17, normalized size = 0.89

$$\frac{dx + \cos(dx + c)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] (d*x + cos(d*x + c))/(a*d)
```

giac [A] time = 0.67, size = 34, normalized size = 1.79

$$\frac{\frac{dx+c}{a} + \frac{2}{\left(\tan\left(\frac{1}{2}\,dx + \frac{1}{2}\,c\right)^2 + 1\right)a}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] ((d*x + c)/a + 2/((tan(1/2*d*x + 1/2*c)^2 + 1)*a))/d
```

maple [B] time = 0.10, size = 43, normalized size = 2.26

$$\frac{2}{ad\left(1 + \tan^2\left(\frac{dx}{2} + \frac{c}{2}\right)\right)} + \frac{2\arctan\left(\tan\left(\frac{dx}{2} + \frac{c}{2}\right)\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] 2/a/d/(1+tan(1/2*d*x+1/2*c)^2)+2/a/d*arctan(tan(1/2*d*x+1/2*c))
```

maxima [B] time = 0.74, size = 52, normalized size = 2.74

$$\frac{2\left(\frac{\arctan\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}\right)}{a} + \frac{1}{a + \frac{a\sin(dx+c)^2}{(\cos(dx+c)+1)^2}}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 2*(arctan(sin(d*x + c)/(cos(d*x + c) + 1))/a + 1/(a + a*sin(d*x + c)^2/(cos
(d*x + c) + 1)^2))/d
```

mupad [B] time = 2.77, size = 29, normalized size = 1.53

$$\frac{x}{a}+\frac{2}{a\,d\,\left({\mathrm{tan}\left(\frac{c}{2}+\frac{d\,x}{2}\right)}^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)^2/(a + a*sin(c + d*x)),x)
```

```
[Out] x/a + 2/(a*d*(tan(c/2 + (d*x)/2)^2 + 1))
```

sympy [A] time = 2.77, size = 88, normalized size = 4.63

$$\begin{cases} \frac{dx \tan^{2}{\left(\frac{c}{2} + \frac{dx}{2} \right)}}{ad \tan^{2}{\left(\frac{c}{2} + \frac{dx}{2} \right)} + ad} + \frac{dx}{ad \tan^{2}{\left(\frac{c}{2} + \frac{dx}{2} \right)} + ad} + \frac{2}{ad \tan^{2}{\left(\frac{c}{2} + \frac{dx}{2} \right)} + ad} & \text{for}\: d \neq 0 \\ \frac{x \cos^{2}{\left(c \right)}}{a \sin{\left(c \right)} + a} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((d*x*tan(c/2 + d*x/2)**2/(a*d*tan(c/2 + d*x/2)**2 + a*d) + d*x/(a
*d*tan(c/2 + d*x/2)**2 + a*d) + 2/(a*d*tan(c/2 + d*x/2)**2 + a*d), Ne(d, 0)
), (x*cos(c)**2/(a*sin(c) + a), True))
```

3.261 $\int \frac{\cos^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=72

$$-\frac{\sin\left(c-\frac{de}{f}\right)\mathrm{Ci}\left(\frac{de}{f}+dx\right)}{af}-\frac{\cos\left(c-\frac{de}{f}\right)\mathrm{Si}\left(\frac{de}{f}+dx\right)}{af}+\frac{\log(e+fx)}{af}$$

```
[Out] ln(f*x+e)/a/f-cos(c-d*e/f)*Si(d*e/f+d*x)/a/f-Ci(d*e/f+d*x)*sin(c-d*e/f)/a/f
```

Rubi [A] time = 0.20, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4523, 31, 3303, 3299, 3302}

$$-\frac{\sin\left(c-\frac{de}{f}\right)\mathrm{CosIntegral}\left(\frac{de}{f}+dx\right)}{af}-\frac{\cos\left(c-\frac{de}{f}\right)\mathrm{Si}\left(\frac{de}{f}+dx\right)}{af}+\frac{\log(e+fx)}{af}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Log[e + f*x]/(a*f) - (CosIntegral[(d*e)/f + d*x]*Sin[c - (d*e)/f])/(a*f) -
(Cos[c - (d*e)/f]*SinIntegral[(d*e)/f + d*x])/(a*f)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
```

```
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\cos^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx &= \frac{\int \frac{1}{e+fx}\,dx}{a} - \frac{\int \frac{\sin(c+dx)}{e+fx}\,dx}{a} \\
&= \frac{\log(e+fx)}{af} - \frac{\cos\left(c-\frac{de}{f}\right)\int \frac{\sin\left(\frac{de}{f}+dx\right)}{e+fx}\,dx}{a} - \frac{\sin\left(c-\frac{de}{f}\right)\int \frac{\cos\left(\frac{de}{f}+dx\right)}{e+fx}\,dx}{a} \\
&= \frac{\log(e+fx)}{af} - \frac{\mathrm{Ci}\left(\frac{de}{f}+dx\right)\sin\left(c-\frac{de}{f}\right)}{af} - \frac{\cos\left(c-\frac{de}{f}\right)\mathrm{Si}\left(\frac{de}{f}+dx\right)}{af}
\end{aligned}
$$

Mathematica [A] time = 0.31, size = 58, normalized size = 0.81

$$
\frac{-\sin\left(c-\frac{de}{f}\right)\mathrm{Ci}\left(d\left(\frac{e}{f}+x\right)\right)-\cos\left(c-\frac{de}{f}\right)\mathrm{Si}\left(d\left(\frac{e}{f}+x\right)\right)+\log(e+fx)}{af}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] (Log[e + f*x] - CosIntegral[d*(e/f + x)]*Sin[c - (d*e)/f] - Cos[c - (d*e)/f
]*SinIntegral[d*(e/f + x)])/(a*f)
```

fricas [A] time = 0.46, size = 89, normalized size = 1.24

$$
-\frac{\left(\mathrm{Ci}\left(\frac{dfx+de}{f}\right)+\mathrm{Ci}\left(-\frac{dfx+de}{f}\right)\right)\sin\left(-\frac{de-cf}{f}\right)+2\cos\left(-\frac{de-cf}{f}\right)\mathrm{Si}\left(\frac{dfx+de}{f}\right)-2\log\left(fx+e\right)}{2af}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*((cos_integral((d*f*x + d*e)/f) + cos_integral(-(d*f*x + d*e)/f))*sin(
-(d*e - c*f)/f) + 2*cos(-(d*e - c*f)/f)*sin_integral((d*f*x + d*e)/f) - 2*l
og(f*x + e))/(a*f)
```

giac [C] time = 1.31, size = 716, normalized size = 9.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(imag_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^2*tan(1/2*d*e/f)^2 -
imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^2*tan(1/2*d*e/f)^2 - 2*log
(abs(f*x + e))*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + 2*sin_integral((d*f*x + d*e)
/f)*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + 2*real_part(cos_integral(d*x + d*e/f))*
tan(1/2*c)^2*tan(1/2*d*e/f) + 2*real_part(cos_integral(-d*x - d*e/f))*tan(1
/2*c)^2*tan(1/2*d*e/f) - 2*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c)*
tan(1/2*d*e/f)^2 - 2*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)*tan(1
/2*d*e/f)^2 - imag_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^2 + imag_part
(cos_integral(-d*x - d*e/f))*tan(1/2*c)^2 - 2*log(abs(f*x + e))*tan(1/2*c)^
2 - 2*sin_integral((d*f*x + d*e)/f)*tan(1/2*c)^2 + 4*imag_part(cos_integral
(d*x + d*e/f))*tan(1/2*c)*tan(1/2*d*e/f) - 4*imag_part(cos_integral(-d*x -
d*e/f))*tan(1/2*c)*tan(1/2*d*e/f) + 8*sin_integral((d*f*x + d*e)/f)*tan(1/2
*c)*tan(1/2*d*e/f) - imag_part(cos_integral(d*x + d*e/f))*tan(1/2*d*e/f)^2
+ imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*e/f)^2 - 2*log(abs(f*x +
e))*tan(1/2*d*e/f)^2 - 2*sin_integral((d*f*x + d*e)/f)*tan(1/2*d*e/f)^2 + 2
*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c) + 2*real_part(cos_integral
(-d*x - d*e/f))*tan(1/2*c) - 2*real_part(cos_integral(d*x + d*e/f))*tan(1/2
*d*e/f) - 2*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*e/f) + imag_par
t(cos_integral(d*x + d*e/f)) - imag_part(cos_integral(-d*x - d*e/f)) - 2*lo
g(abs(f*x + e)) + 2*sin_integral((d*f*x + d*e)/f))/(a*f*tan(1/2*c)^2*tan(1/
2*d*e/f)^2 + a*f*tan(1/2*c)^2 + a*f*tan(1/2*d*e/f)^2 + a*f)
```

maple [A] time = 0.11, size = 102, normalized size = 1.42

$$-\frac{\operatorname{Si}\left(dx+c+\frac{-cf+de}{f}\right)\cos\left(\frac{-cf+de}{f}\right)}{af}+\frac{\operatorname{Ci}\left(dx+c+\frac{-cf+de}{f}\right)\sin\left(\frac{-cf+de}{f}\right)}{af}+\frac{\ln\left((dx+c)f-cf+de\right)}{af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/a*Si(d*x+c+(-c*f+d*e)/f)*cos((-c*f+d*e)/f)/f+1/a*Ci(d*x+c+(-c*f+d*e)/f)*
sin((-c*f+d*e)/f)/f+1/a*ln((d*x+c)*f-c*f+d*e)/f
```

maxima [C] time = 0.41, size = 163, normalized size = 2.26

$$\frac{d\left(iE_1\left(\frac{ide+i(dx+c)f-icf}{f}\right)-iE_1\left(-\frac{ide+i(dx+c)f-icf}{f}\right)\right)\cos\left(-\frac{de-cf}{f}\right)+d\left(E_1\left(\frac{ide+i(dx+c)f-icf}{f}\right)+E_1\left(-\frac{ide+i(dx+c)f-icf}{f}\right)\right.}{2\,adf}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(d*(I*exp_integral_e(1, (I*d*e + I*(d*x + c)*f - I*c*f)/f) - I*exp_inte
gral_e(1, -(I*d*e + I*(d*x + c)*f - I*c*f)/f))*cos(-(d*e - c*f)/f) + d*(exp
_integral_e(1, (I*d*e + I*(d*x + c)*f - I*c*f)/f) + exp_integral_e(1, -(I*d
*e + I*(d*x + c)*f - I*c*f)/f))*sin(-(d*e - c*f)/f) + 2*d*log(d*e + (d*x +
c)*f - c*f))/(a*d*f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cos\left(c+d\,x\right)^2}{\left(e+f\,x\right)\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)^2/((e + f*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] int(cos(c + d*x)^2/((e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\cos^2(c+dx)}{e\sin(c+dx)+e+fx\sin(c+dx)+fx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(cos(c + d*x)**2/(e*sin(c + d*x) + e + f*x*sin(c + d*x) + f*x), x)/
a
```

3.262 $\int \frac{\cos^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=95

$$-\frac{d\cos\left(c-\frac{de}{f}\right)\text{Ci}\left(\frac{de}{f}+dx\right)}{af^2}+\frac{d\sin\left(c-\frac{de}{f}\right)\text{Si}\left(\frac{de}{f}+dx\right)}{af^2}+\frac{\sin(c+dx)}{af(e+fx)}-\frac{1}{af(e+fx)}$$

```
[Out] -1/a/f/(f*x+e)-d*Ci(d*e/f+d*x)*cos(c-d*e/f)/a/f^2+d*Si(d*e/f+d*x)*sin(c-d*e
/f)/a/f^2+sin(d*x+c)/a/f/(f*x+e)
```

Rubi [A] time = 0.20, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4523, 32, 3297, 3303, 3299, 3302}

$$-\frac{d\cos\left(c-\frac{de}{f}\right)\text{CosIntegral}\left(\frac{de}{f}+dx\right)}{af^2}+\frac{d\sin\left(c-\frac{de}{f}\right)\text{Si}\left(\frac{de}{f}+dx\right)}{af^2}+\frac{\sin(c+dx)}{af(e+fx)}-\frac{1}{af(e+fx)}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] -(1/(a*f*(e + f*x))) - (d*Cos[c - (d*e)/f]*CosIntegral[(d*e)/f + d*x])/(a*f
^2) + Sin[c + d*x]/(a*f*(e + f*x)) + (d*Sin[c - (d*e)/f]*SinIntegral[(d*e)/
f + d*x])/(a*f^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cos^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx &= \frac{\int \frac{1}{(e+fx)^2}\,dx}{a} - \frac{\int \frac{\sin(c+dx)}{(e+fx)^2}\,dx}{a} \\
&= -\frac{1}{af(e+fx)} + \frac{\sin(c+dx)}{af(e+fx)} - \frac{d\int \frac{\cos(c+dx)}{e+fx}\,dx}{af} \\
&= -\frac{1}{af(e+fx)} + \frac{\sin(c+dx)}{af(e+fx)} - \frac{\left(d\cos\left(c-\frac{de}{f}\right)\right)\int \frac{\cos\left(\frac{de}{f}+dx\right)}{e+fx}\,dx}{af} + \frac{\left(d\sin\left(c-\right.\right.}{} \\
&= -\frac{1}{af(e+fx)} - \frac{d\cos\left(c-\frac{de}{f}\right)\operatorname{Ci}\left(\frac{de}{f}+dx\right)}{af^2} + \frac{\sin(c+dx)}{af(e+fx)} + \frac{d\sin\left(c-\frac{de}{f}\right)\operatorname{S}}{af^2}
\end{aligned}$$

Mathematica [A] time = 0.44, size = 80, normalized size = 0.84

$$\frac{-d(e+fx)\cos\left(c-\frac{de}{f}\right)\operatorname{Ci}\left(d\left(\frac{e}{f}+x\right)\right)+d(e+fx)\sin\left(c-\frac{de}{f}\right)\operatorname{Si}\left(d\left(\frac{e}{f}+x\right)\right)+f(\sin(c+dx)-1)}{af^2(e+fx)}$$

Antiderivative was successfully verified.

[In] Integrate[Cos[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])),x]

[Out] (-(d*(e + f*x)*Cos[c - (d*e)/f]*CosIntegral[d*(e/f + x)]) + f*(-1 + Sin[c + d*x]) + d*(e + f*x)*Sin[c - (d*e)/f]*SinIntegral[d*(e/f + x)])/(a*f^2*(e + f*x))

fricas [A] time = 0.45, size = 129, normalized size = 1.36

$$\frac{2\left(dfx+de\right)\sin\left(-\frac{de-cf}{f}\right)\mathrm{Si}\left(\frac{dfx+de}{f}\right)-\left(\left(dfx+de\right)\mathrm{Ci}\left(\frac{dfx+de}{f}\right)+\left(dfx+de\right)\mathrm{Ci}\left(-\frac{dfx+de}{f}\right)\right)\cos\left(-\frac{de-cf}{f}\right)+2\,f\sin}{2\left(af^{3}x+aef^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(cos(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")

[Out] 1/2*(2*(d*f*x + d*e)*sin(-(d*e - c*f)/f)*sin_integral((d*f*x + d*e)/f) - ((d*f*x + d*e)*cos_integral((d*f*x + d*e)/f) + (d*f*x + d*e)*cos_integral(-(d*f*x + d*e)/f))*cos(-(d*e - c*f)/f) + 2*f*sin(d*x + c) - 2*f)/(a*f^3*x + a*e*f^2)

giac [C] time = 6.45, size = 3408, normalized size = 35.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(cos(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")

[Out] -1/2*(d*f*x*real_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + d*f*x*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f)^2 - 2*d*f*x*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f) + 2*d*f*x*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f) - 4*d*f*x*sin_integral((d*f*x + d*e)/f)*tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f) + 2*d*f*x*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)*tan(1/2*d*e/f)^2 - 2*d*f*x*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)*tan(1/2*d*e/f)^2 + 4*d*f*x*sin_integral((d*f*x + d*e)/f)*tan(1/2*d*x)^2*tan(1/2*c)*tan(1/2*d*e/f)^2 + d*e*real_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + d*e*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f)^2 - d*f*x*real_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2 - d*f*x*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2 + 4*d*f*x*real_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)*tan(1/2*d*e/f) + 4*d*f*x*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)*tan(1/2*d*e/f) - 2*d*e*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f) + 2*d*e*imag_part(cos_integral(-d*x - d*e/f))*ta

```
n(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f) - 4*d*e*sin_integral((d*f*x + d*e)
/f)*tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f) - d*f*x*real_part(cos_integr
al(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*d*e/f)^2 - d*f*x*real_part(cos_inte
gral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*d*e/f)^2 + 2*d*e*imag_part(cos_i
ntegral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)*tan(1/2*d*e/f)^2 - 2*d*e*im
ag_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)*tan(1/2*d*e/f
)^2 + 4*d*e*sin_integral((d*f*x + d*e)/f)*tan(1/2*d*x)^2*tan(1/2*c)*tan(1/2
*d*e/f)^2 + d*f*x*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^2*tan(1/2
*d*e/f)^2 + d*f*x*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^2*tan(1/
2*d*e/f)^2 - 2*d*f*x*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*ta
n(1/2*c) + 2*d*f*x*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan
(1/2*c) - 4*d*f*x*sin_integral((d*f*x + d*e)/f)*tan(1/2*d*x)^2*tan(1/2*c) -
 d*e*real_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2 - d*e
*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*d*f*
x*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*d*e/f) - 2*d*
f*x*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*d*e/f) + 4
*d*f*x*sin_integral((d*f*x + d*e)/f)*tan(1/2*d*x)^2*tan(1/2*d*e/f) + 4*d*e*
real_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)*tan(1/2*d*e/
f) + 4*d*e*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*c)*
tan(1/2*d*e/f) - 2*d*f*x*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^2*
tan(1/2*d*e/f) + 2*d*f*x*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^2
*tan(1/2*d*e/f) - 4*d*f*x*sin_integral((d*f*x + d*e)/f)*tan(1/2*c)^2*tan(1/
2*d*e/f) - d*e*real_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*
d*e/f)^2 - d*e*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2
*d*e/f)^2 + 2*d*f*x*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*c)*tan(1/2
*d*e/f)^2 - 2*d*f*x*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)*tan(1/
2*d*e/f)^2 + 4*d*f*x*sin_integral((d*f*x + d*e)/f)*tan(1/2*c)*tan(1/2*d*e/f
)^2 + d*e*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^2*tan(1/2*d*e/f)^
2 + d*e*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^2*tan(1/2*d*e/f)^2
 + 2*f*tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + d*f*x*real_part(cos_i
ntegral(d*x + d*e/f))*tan(1/2*d*x)^2 + d*f*x*real_part(cos_integral(-d*x -
d*e/f))*tan(1/2*d*x)^2 - 2*d*e*imag_part(cos_integral(d*x + d*e/f))*tan(1/2
*d*x)^2*tan(1/2*c) + 2*d*e*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*
x)^2*tan(1/2*c) - 4*d*e*sin_integral((d*f*x + d*e)/f)*tan(1/2*d*x)^2*tan(1/
2*c) - d*f*x*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^2 - d*f*x*real
_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^2 + 2*d*e*imag_part(cos_integr
al(d*x + d*e/f))*tan(1/2*d*x)^2*tan(1/2*d*e/f) - 2*d*e*imag_part(cos_integr
al(-d*x - d*e/f))*tan(1/2*d*x)^2*tan(1/2*d*e/f) + 4*d*e*sin_integral((d*f*x
 + d*e)/f)*tan(1/2*d*x)^2*tan(1/2*d*e/f) + 4*d*f*x*real_part(cos_integral(d
*x + d*e/f))*tan(1/2*c)*tan(1/2*d*e/f) + 4*d*f*x*real_part(cos_integral(-d*
x - d*e/f))*tan(1/2*c)*tan(1/2*d*e/f) - 2*d*e*imag_part(cos_integral(d*x +
d*e/f))*tan(1/2*c)^2*tan(1/2*d*e/f) + 2*d*e*imag_part(cos_integral(-d*x - d
*e/f))*tan(1/2*c)^2*tan(1/2*d*e/f) - 4*d*e*sin_integral((d*f*x + d*e)/f)*ta
n(1/2*c)^2*tan(1/2*d*e/f) - d*f*x*real_part(cos_integral(d*x + d*e/f))*tan(
1/2*d*e/f)^2 - d*f*x*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*e/f)^2
```

```
 + 2*d*e*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*c)*tan(1/2*d*e/f)^2 -
 2*d*e*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)*tan(1/2*d*e/f)^2 +
4*d*e*sin_integral((d*f*x + d*e)/f)*tan(1/2*c)*tan(1/2*d*e/f)^2 + 4*f*tan(1
/2*d*x)^2*tan(1/2*c)*tan(1/2*d*e/f)^2 + 4*f*tan(1/2*d*x)*tan(1/2*c)^2*tan(1
/2*d*e/f)^2 + d*e*real_part(cos_integral(d*x + d*e/f))*tan(1/2*d*x)^2 + d*e
*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*x)^2 - 2*d*f*x*imag_part(c
os_integral(d*x + d*e/f))*tan(1/2*c) + 2*d*f*x*imag_part(cos_integral(-d*x
- d*e/f))*tan(1/2*c) - 4*d*f*x*sin_integral((d*f*x + d*e)/f)*tan(1/2*c) - d
*e*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^2 - d*e*real_part(cos_in
tegral(-d*x - d*e/f))*tan(1/2*c)^2 + 2*f*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*d*
f*x*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*d*e/f) - 2*d*f*x*imag_part
(cos_integral(-d*x - d*e/f))*tan(1/2*d*e/f) + 4*d*f*x*sin_integral((d*f*x +
 d*e)/f)*tan(1/2*d*e/f) + 4*d*e*real_part(cos_integral(d*x + d*e/f))*tan(1/
2*c)*tan(1/2*d*e/f) + 4*d*e*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*c
)*tan(1/2*d*e/f) - d*e*real_part(cos_integral(d*x + d*e/f))*tan(1/2*d*e/f)^
2 - d*e*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*e/f)^2 + 2*f*tan(1/
2*d*x)^2*tan(1/2*d*e/f)^2 + 2*f*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + d*f*x*real_
part(cos_integral(d*x + d*e/f)) + d*f*x*real_part(cos_integral(-d*x - d*e/f
)) - 2*d*e*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*c) + 2*d*e*imag_par
t(cos_integral(-d*x - d*e/f))*tan(1/2*c) - 4*d*e*sin_integral((d*f*x + d*e)
/f)*tan(1/2*c) + 4*f*tan(1/2*d*x)^2*tan(1/2*c) + 4*f*tan(1/2*d*x)*tan(1/2*c
)^2 + 2*d*e*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*d*e/f) - 2*d*e*ima
g_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*e/f) + 4*d*e*sin_integral((d*f
*x + d*e)/f)*tan(1/2*d*e/f) - 4*f*tan(1/2*d*x)*tan(1/2*d*e/f)^2 - 4*f*tan(1
/2*c)*tan(1/2*d*e/f)^2 + d*e*real_part(cos_integral(d*x + d*e/f)) + d*e*rea
l_part(cos_integral(-d*x - d*e/f)) + 2*f*tan(1/2*d*x)^2 + 2*f*tan(1/2*c)^2
+ 2*f*tan(1/2*d*e/f)^2 - 4*f*tan(1/2*d*x) - 4*f*tan(1/2*c) + 2*f)/(a*f^3*x*
tan(1/2*d*x)^2*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + a*f^2*e*tan(1/2*d*x)^2*tan(1
/2*c)^2*tan(1/2*d*e/f)^2 + a*f^3*x*tan(1/2*d*x)^2*tan(1/2*c)^2 + a*f^3*x*ta
n(1/2*d*x)^2*tan(1/2*d*e/f)^2 + a*f^3*x*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + a*f
^2*e*tan(1/2*d*x)^2*tan(1/2*c)^2 + a*f^2*e*tan(1/2*d*x)^2*tan(1/2*d*e/f)^2
+ a*f^2*e*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + a*f^3*x*tan(1/2*d*x)^2 + a*f^3*x*
tan(1/2*c)^2 + a*f^3*x*tan(1/2*d*e/f)^2 + a*f^2*e*tan(1/2*d*x)^2 + a*f^2*e*
tan(1/2*c)^2 + a*f^2*e*tan(1/2*d*e/f)^2 + a*f^3*x + a*f^2*e)
```

maple [A] time = 0.11, size = 132, normalized size = 1.39

$$\frac{d\left(\frac{\sin(dx+c)}{\left((dx+c)f-cf+de\right)f}-\frac{\frac{\operatorname{Si}\left(dx+c+\frac{-cf+de}{f}\right)\sin\left(\frac{-cf+de}{f}\right)}{f}+\frac{\operatorname{Ci}\left(dx+c+\frac{-cf+de}{f}\right)\cos\left(\frac{-cf+de}{f}\right)}{f}}{f}-\frac{1}{\left((dx+c)f-cf+de\right)f}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] d/a*(sin(d*x+c)/((d*x+c)*f-c*f+d*e)/f-(Si(d*x+c+(-c*f+d*e)/f)*sin((-c*f+d*e
)/f)/f+Ci(d*x+c+(-c*f+d*e)/f)*cos((-c*f+d*e)/f)/f)/f-1/((d*x+c)*f-c*f+d*e)/
f)
```

maxima [C] time = 1.04, size = 172, normalized size = 1.81

$$\frac{d^2\left(i\,E_2\left(\frac{i\,de+i\,(dx+c)f-i\,cf}{f}\right)-i\,E_2\left(-\frac{i\,de+i\,(dx+c)f-i\,cf}{f}\right)\right)\cos\left(-\frac{de-cf}{f}\right)+d^2\left(E_2\left(\frac{i\,de+i\,(dx+c)f-i\,cf}{f}\right)+E_2\left(-\frac{i\,de+i\,(dx+c)f-i\,cf}{f}\right.\right.}{2\left(adef+(dx+c)af^2-acf^2\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*(d^2*(I*exp_integral_e(2, (I*d*e + I*(d*x + c)*f - I*c*f)/f) - I*exp_in
tegral_e(2, -(I*d*e + I*(d*x + c)*f - I*c*f)/f))*cos(-(d*e - c*f)/f) + d^2*
(exp_integral_e(2, (I*d*e + I*(d*x + c)*f - I*c*f)/f) + exp_integral_e(2, -
(I*d*e + I*(d*x + c)*f - I*c*f)/f))*sin(-(d*e - c*f)/f) - 2*d^2)/((a*d*e*f
+ (d*x + c)*a*f^2 - a*c*f^2)*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cos\left(c+d\,x\right)^2}{{\left(e+f\,x\right)}^2\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)^2/((e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(cos(c + d*x)^2/((e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\cos^2(c+dx)}{e^2\sin(c+dx)+e^2+2efx\sin(c+dx)+2efx+f^2x^2\sin(c+dx)+f^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**2/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(cos(c + d*x)**2/(e**2*sin(c + d*x) + e**2 + 2*e*f*x*sin(c + d*x) +
 2*e*f*x + f**2*x**2*sin(c + d*x) + f**2*x**2), x)/a
```

3.263 $\int \frac{(e+fx)^3\cos^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=219

$$-\frac{6f^3\cos(c+dx)}{ad^4}+\frac{3f^3\sin(c+dx)\cos(c+dx)}{8ad^4}+\frac{3f^2(e+fx)\sin^2(c+dx)}{4ad^3}-\frac{6f^2(e+fx)\sin(c+dx)}{ad^3}+\frac{3f(e+fx)^2}{ad\ldots}$$

```
[Out] -3/8*f^3*x/a/d^3+1/4*(f*x+e)^3/a/d-6*f^3*cos(d*x+c)/a/d^4+3*f*(f*x+e)^2*cos
(d*x+c)/a/d^2-6*f^2*(f*x+e)*sin(d*x+c)/a/d^3+(f*x+e)^3*sin(d*x+c)/a/d+3/8*f
^3*cos(d*x+c)*sin(d*x+c)/a/d^4-3/4*f*(f*x+e)^2*cos(d*x+c)*sin(d*x+c)/a/d^2+
3/4*f^2*(f*x+e)*sin(d*x+c)^2/a/d^3-1/2*(f*x+e)^3*sin(d*x+c)^2/a/d
```

Rubi [A] time = 0.24, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {4523, 3296, 2638, 4404, 3311, 32, 2635, 8}

$$\frac{3f^2(e+fx)\sin^2(c+dx)}{4ad^3}-\frac{6f^2(e+fx)\sin(c+dx)}{ad^3}+\frac{3f(e+fx)^2\cos(c+dx)}{ad^2}-\frac{3f(e+fx)^2\sin(c+dx)\cos(c+dx)}{4ad^2}\ldots$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-3*f^3*x)/(8*a*d^3) + (e + f*x)^3/(4*a*d) - (6*f^3*Cos[c + d*x])/(a*d^4) +
 (3*f*(e + f*x)^2*Cos[c + d*x])/(a*d^2) - (6*f^2*(e + f*x)*Sin[c + d*x])/(a
*d^3) + ((e + f*x)^3*Sin[c + d*x])/(a*d) + (3*f^3*Cos[c + d*x]*Sin[c + d*x]
)/(8*a*d^4) - (3*f*(e + f*x)^2*Cos[c + d*x]*Sin[c + d*x])/(4*a*d^2) + (3*f^
2*(e + f*x)*Sin[c + d*x]^2)/(4*a*d^3) - ((e + f*x)^3*Sin[c + d*x]^2)/(2*a*d
)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\cos(c+dx)\,dx}{a} - \frac{\int (e+fx)^3\cos(c+dx)\sin(c+dx)\,dx}{a}$$
$$= \frac{(e+fx)^3\sin(c+dx)}{ad} - \frac{(e+fx)^3\sin^2(c+dx)}{2ad} + \frac{(3f)\int (e+fx)^2\sin^2(c+dx)\,dx}{2ad}$$
$$= \frac{3f(e+fx)^2\cos(c+dx)}{ad^2} + \frac{(e+fx)^3\sin(c+dx)}{ad} - \frac{3f(e+fx)^2\cos(c+dx)\sin(c}{4ad^2}$$
$$= \frac{(e+fx)^3}{4ad} + \frac{3f(e+fx)^2\cos(c+dx)}{ad^2} - \frac{6f^2(e+fx)\sin(c+dx)}{ad^3} + \frac{(e+fx)^3\sin(c}{ad}$$
$$= -\frac{3f^3x}{8ad^3} + \frac{(e+fx)^3}{4ad} - \frac{6f^3\cos(c+dx)}{ad^4} + \frac{3f(e+fx)^2\cos(c+dx)}{ad^2} - \frac{6f^2(e+fx)\mathrm{si}}{ad^3}$$

Mathematica [A] time = 1.36, size = 132, normalized size = 0.60

$$\frac{96f\cos(c+dx)\left(d^2(e+fx)^2-2f^2\right)+4d(e+fx)\cos(2(c+dx))\left(2d^2(e+fx)^2-3f^2\right)+4\sin(c+dx)\left(8d(e+fx)\right.}{32ad^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (96*f*(-2*f^2 + d^2*(e + f*x)^2)*Cos[c + d*x] + 4*d*(e + f*x)*(-3*f^2 + 2*d
^2*(e + f*x)^2)*Cos[2*(c + d*x)] + 4*(8*d*(e + f*x)*(-6*f^2 + d^2*(e + f*x)
^2) - 3*f*(-f^2 + 2*d^2*(e + f*x)^2)*Cos[c + d*x])*Sin[c + d*x])/(32*a*d^4)
```

fricas [A] time = 0.44, size = 270, normalized size = 1.23

$$-\frac{2\,d^3f^3x^3+6\,d^3ef^2x^2-2\left(2\,d^3f^3x^3+6\,d^3ef^2x^2+2\,d^3e^3-3\,def^2+3\left(2\,d^3e^2f-df^3\right)x\right)\cos\left(dx+c\right)^2+3\left(2\,d^3e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/8*(2*d^3*f^3*x^3 + 6*d^3*e*f^2*x^2 - 2*(2*d^3*f^3*x^3 + 6*d^3*e*f^2*x^2
+ 2*d^3*e^3 - 3*d*e*f^2 + 3*(2*d^3*e^2*f - d*f^3)*x)*cos(d*x + c)^2 + 3*(2*
d^3*e^2*f - d*f^3)*x - 24*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f - 2*f^3)
*cos(d*x + c) - (8*d^3*f^3*x^3 + 24*d^3*e*f^2*x^2 + 8*d^3*e^3 - 48*d*e*f^2
+ 24*(d^3*e^2*f - 2*d*f^3)*x - 3*(2*d^2*f^3*x^2 + 4*d^2*e*f^2*x + 2*d^2*e^2
*f - f^3)*cos(d*x + c))*sin(d*x + c))/(a*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.12, size = 737, normalized size = 3.37

$$-\frac{f^3\left(-\frac{(dx+c)^3\left(\cos^2(dx+c)\right)}{2}+\frac{3(dx+c)^2\left(\frac{\cos(dx+c)\sin(dx+c)}{2}+\frac{dx}{2}+\frac{c}{2}\right)}{2}+\frac{3(dx+c)\left(\cos^2(dx+c)\right)}{4}-\frac{3\cos(dx+c)\sin(dx+c)}{8}-\frac{3dx}{8}-\frac{3c}{8}-\frac{(dx+c)^3}{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/d^4/a*(f^3*(-1/2*(d*x+c)^3*cos(d*x+c)^2+3/2*(d*x+c)^2*(1/2*cos(d*x+c)*si
n(d*x+c)+1/2*d*x+1/2*c)+3/4*(d*x+c)*cos(d*x+c)^2-3/8*cos(d*x+c)*sin(d*x+c)-
3/8*d*x-3/8*c-1/2*(d*x+c)^3)-3*c*f^3*(-1/2*(d*x+c)^2*cos(d*x+c)^2+(d*x+c)*(
1/2*cos(d*x+c)*sin(d*x+c)+1/2*d*x+1/2*c)-1/4*(d*x+c)^2-1/4*sin(d*x+c)^2)+3*
f^2*e*d*(-1/2*(d*x+c)^2*cos(d*x+c)^2+(d*x+c)*(1/2*cos(d*x+c)*sin(d*x+c)+1/2
*d*x+1/2*c)-1/4*(d*x+c)^2-1/4*sin(d*x+c)^2)+3*c^2*f^3*(-1/2*(d*x+c)*cos(d*x
+c)^2+1/4*cos(d*x+c)*sin(d*x+c)+1/4*d*x+1/4*c)-6*c*d*e*f^2*(-1/2*(d*x+c)*co
s(d*x+c)^2+1/4*cos(d*x+c)*sin(d*x+c)+1/4*d*x+1/4*c)+3*d^2*e^2*f*(-1/2*(d*x+
c)*cos(d*x+c)^2+1/4*cos(d*x+c)*sin(d*x+c)+1/4*d*x+1/4*c)+1/2*c^3*f^3*cos(d*
x+c)^2-3/2*c^2*d*e*f^2*cos(d*x+c)^2+3/2*c*d^2*e^2*f*cos(d*x+c)^2-1/2*d^3*e^
3*cos(d*x+c)^2-f^3*((d*x+c)^3*sin(d*x+c)+3*(d*x+c)^2*cos(d*x+c)-6*cos(d*x+c
)-6*(d*x+c)*sin(d*x+c))+3*c*f^3*((d*x+c)^2*sin(d*x+c)-2*sin(d*x+c)+2*(d*x+c
)*cos(d*x+c))-3*f^2*e*d*((d*x+c)^2*sin(d*x+c)-2*sin(d*x+c)+2*(d*x+c)*cos(d*
x+c))-3*c^2*f^3*(cos(d*x+c)+(d*x+c)*sin(d*x+c))+6*c*d*e*f^2*(cos(d*x+c)+(d*
x+c)*sin(d*x+c))-3*d^2*e^2*f*(cos(d*x+c)+(d*x+c)*sin(d*x+c))+sin(d*x+c)*c^3
*f^3-3*sin(d*x+c)*c^2*d*e*f^2+3*sin(d*x+c)*c*d^2*e^2*f-sin(d*x+c)*d^3*e^3)
```

maxima [B] time = 0.79, size = 572, normalized size = 2.61

$$-\frac{\frac{8\left(\sin(dx+c)^2-2\sin(dx+c)\right)e^3}{a}-\frac{24\left(\sin(dx+c)^2-2\sin(dx+c)\right)ce^2f}{ad}+\frac{24\left(\sin(dx+c)^2-2\sin(dx+c)\right)c^2ef^2}{ad^2}-\frac{8\left(\sin(dx+c)^2-2\sin(dx+c)\right)c^3f^3}{ad^3}-\ldots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/16*(8*(sin(d*x + c)^2 - 2*sin(d*x + c))*e^3/a - 24*(sin(d*x + c)^2 - 2*s
in(d*x + c))*c*e^2*f/(a*d) + 24*(sin(d*x + c)^2 - 2*sin(d*x + c))*c^2*e*f^2
/(a*d^2) - 8*(sin(d*x + c)^2 - 2*sin(d*x + c))*c^3*f^3/(a*d^3) - 6*(2*(d*x
+ c)*cos(2*d*x + 2*c) + 8*(d*x + c)*sin(d*x + c) + 8*cos(d*x + c) - sin(2*d
```

```
*x + 2*c))*e^2*f/(a*d) + 12*(2*(d*x + c)*cos(2*d*x + 2*c) + 8*(d*x + c)*sin
(d*x + c) + 8*cos(d*x + c) - sin(2*d*x + 2*c))*c*e*f^2/(a*d^2) - 6*(2*(d*x
+ c)*cos(2*d*x + 2*c) + 8*(d*x + c)*sin(d*x + c) + 8*cos(d*x + c) - sin(2*d
*x + 2*c))*c^2*f^3/(a*d^3) - 6*((2*(d*x + c)^2 - 1)*cos(2*d*x + 2*c) + 16*(
d*x + c)*cos(d*x + c) - 2*(d*x + c)*sin(2*d*x + 2*c) + 8*((d*x + c)^2 - 2)*
sin(d*x + c))*e*f^2/(a*d^2) + 6*((2*(d*x + c)^2 - 1)*cos(2*d*x + 2*c) + 16*
(d*x + c)*cos(d*x + c) - 2*(d*x + c)*sin(2*d*x + 2*c) + 8*((d*x + c)^2 - 2)
*sin(d*x + c))*c*f^3/(a*d^3) - (2*(2*(d*x + c)^3 - 3*d*x - 3*c)*cos(2*d*x +
 2*c) + 48*((d*x + c)^2 - 2)*cos(d*x + c) - 3*(2*(d*x + c)^2 - 1)*sin(2*d*x
 + 2*c) + 16*((d*x + c)^3 - 6*d*x - 6*c)*sin(d*x + c))*f^3/(a*d^3))/d
```

mupad [B] time = 3.49, size = 339, normalized size = 1.55

$$\frac{\frac{3\,f^3\,\sin(2\,c+2\,d\,x)}{2}-48\,f^3\,\cos\left(c+d\,x\right)+8\,d^3\,e^3\,\sin\left(c+d\,x\right)+2\,d^3\,e^3\,\cos\left(2\,c+2\,d\,x\right)-3\,d^2\,e^2\,f\,\sin\left(2\,c+2\,d\,x\right)+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*(e + f*x)^3)/(a + a*sin(c + d*x)),x)
```

```
[Out] ((3*f^3*sin(2*c + 2*d*x))/2 - 48*f^3*cos(c + d*x) + 8*d^3*e^3*sin(c + d*x)
+ 2*d^3*e^3*cos(2*c + 2*d*x) - 3*d^2*e^2*f*sin(2*c + 2*d*x) + 24*d^2*f^3*x^
2*cos(c + d*x) + 8*d^3*f^3*x^3*sin(c + d*x) - 48*d*e*f^2*sin(c + d*x) - 48*
d*f^3*x*sin(c + d*x) + 2*d^3*f^3*x^3*cos(2*c + 2*d*x) - 3*d^2*f^3*x^2*sin(2
*c + 2*d*x) - 3*d*e*f^2*cos(2*c + 2*d*x) + 24*d^2*e^2*f*cos(c + d*x) - 3*d*
f^3*x*cos(2*c + 2*d*x) + 48*d^2*e*f^2*x*cos(c + d*x) + 24*d^3*e^2*f*x*sin(c
 + d*x) + 6*d^3*e^2*f*x*cos(2*c + 2*d*x) - 6*d^2*e*f^2*x*sin(2*c + 2*d*x) +
 24*d^3*e*f^2*x^2*sin(c + d*x) + 6*d^3*e*f^2*x^2*cos(2*c + 2*d*x))/(8*a*d^4
)
```

sympy [A] time = 18.78, size = 2725, normalized size = 12.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((16*d**3*e**3*tan(c/2 + d*x/2)**3/(8*a*d**4*tan(c/2 + d*x/2)**4 +
 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 16*d**3*e**3*tan(c/2 + d*x/2)*
*2/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4
) + 16*d**3*e**3*tan(c/2 + d*x/2)/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4
*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 6*d**3*e**2*f*x*tan(c/2 + d*x/2)**4/(8*a
*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 48*
d**3*e**2*f*x*tan(c/2 + d*x/2)**3/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4
*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 36*d**3*e**2*f*x*tan(c/2 + d*x/2)**2/(8*
```

a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 48
*d**3*e**2*f*x*tan(c/2 + d*x/2)/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*t
an(c/2 + d*x/2)**2 + 8*a*d**4) + 6*d**3*e**2*f*x/(8*a*d**4*tan(c/2 + d*x/2)
4 + 16*a*d4*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 6*d**3*e*f**2*x**2*tan(c/
2 + d*x/2)**4/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2
 + 8*a*d**4) + 48*d**3*e*f**2*x**2*tan(c/2 + d*x/2)**3/(8*a*d**4*tan(c/2 +
d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 36*d**3*e*f**2*x**2
*tan(c/2 + d*x/2)**2/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*
x/2)**2 + 8*a*d**4) + 48*d**3*e*f**2*x**2*tan(c/2 + d*x/2)/(8*a*d**4*tan(c/
2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 6*d**3*e*f**2*x
2/(8*a*d4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**
4) + 2*d**3*f**3*x**3*tan(c/2 + d*x/2)**4/(8*a*d**4*tan(c/2 + d*x/2)**4 + 1
6*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 16*d**3*f**3*x**3*tan(c/2 + d*x/
2)**3/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d
4) - 12*d3*f**3*x**3*tan(c/2 + d*x/2)**2/(8*a*d**4*tan(c/2 + d*x/2)**4
+ 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 16*d**3*f**3*x**3*tan(c/2 + d
*x/2)/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d
4) + 2*d3*f**3*x**3/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 +
 d*x/2)**2 + 8*a*d**4) + 12*d**2*e**2*f*tan(c/2 + d*x/2)**3/(8*a*d**4*tan(c
/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 48*d**2*e**2*f
*tan(c/2 + d*x/2)**2/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*
x/2)**2 + 8*a*d**4) - 12*d**2*e**2*f*tan(c/2 + d*x/2)/(8*a*d**4*tan(c/2 + d
*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 48*d**2*e**2*f/(8*a*
d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 48*d
2*e*f2*x*tan(c/2 + d*x/2)**4/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*
tan(c/2 + d*x/2)**2 + 8*a*d**4) + 24*d**2*e*f**2*x*tan(c/2 + d*x/2)**3/(8*a
*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 24*
d**2*e*f**2*x*tan(c/2 + d*x/2)/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*ta
n(c/2 + d*x/2)**2 + 8*a*d**4) + 48*d**2*e*f**2*x/(8*a*d**4*tan(c/2 + d*x/2)
4 + 16*a*d4*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 24*d**2*f**3*x**2*tan(c/2
 + d*x/2)**4/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2
+ 8*a*d**4) + 12*d**2*f**3*x**2*tan(c/2 + d*x/2)**3/(8*a*d**4*tan(c/2 + d*x
/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 12*d**2*f**3*x**2*tan(
c/2 + d*x/2)/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2
+ 8*a*d**4) + 24*d**2*f**3*x**2/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*t
an(c/2 + d*x/2)**2 + 8*a*d**4) - 96*d*e*f**2*tan(c/2 + d*x/2)**3/(8*a*d**4*
tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 24*d*e*f*
*2*tan(c/2 + d*x/2)**2/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 +
d*x/2)**2 + 8*a*d**4) - 96*d*e*f**2*tan(c/2 + d*x/2)/(8*a*d**4*tan(c/2 + d*
x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 3*d*f**3*x*tan(c/2 +
d*x/2)**4/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8
*a*d**4) - 96*d*f**3*x*tan(c/2 + d*x/2)**3/(8*a*d**4*tan(c/2 + d*x/2)**4 +
16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) + 18*d*f**3*x*tan(c/2 + d*x/2)**2
/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4)
- 96*d*f**3*x*tan(c/2 + d*x/2)/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*ta

```
n(c/2 + d*x/2)**2 + 8*a*d**4) - 3*d*f**3*x/(8*a*d**4*tan(c/2 + d*x/2)**4 +
16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 6*f**3*tan(c/2 + d*x/2)**3/(8*a
*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 96*
f**3*tan(c/2 + d*x/2)**2/(8*a*d**4*tan(c/2 + d*x/2)**4 + 16*a*d**4*tan(c/2
+ d*x/2)**2 + 8*a*d**4) + 6*f**3*tan(c/2 + d*x/2)/(8*a*d**4*tan(c/2 + d*x/2
)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4) - 96*f**3/(8*a*d**4*tan(c/
2 + d*x/2)**4 + 16*a*d**4*tan(c/2 + d*x/2)**2 + 8*a*d**4), Ne(d, 0)), ((e**
3*x + 3*e**2*f*x**2/2 + e*f**2*x**3 + f**3*x**4/4)*cos(c)**3/(a*sin(c) + a)
, True))
```

3.264 $\int \frac{(e+fx)^2\cos^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=161

$$\frac{f^2\sin^2(c+dx)}{4ad^3}-\frac{2f^2\sin(c+dx)}{ad^3}+\frac{2f(e+fx)\cos(c+dx)}{ad^2}-\frac{f(e+fx)\sin(c+dx)\cos(c+dx)}{2ad^2}-\frac{(e+fx)^2\sin^2(c+}{2ad}$$

```
[Out] 1/2*e*f*x/a/d+1/4*f^2*x^2/a/d+2*f*(f*x+e)*cos(d*x+c)/a/d^2-2*f^2*sin(d*x+c)
/a/d^3+(f*x+e)^2*sin(d*x+c)/a/d-1/2*f*(f*x+e)*cos(d*x+c)*sin(d*x+c)/a/d^2+1
/4*f^2*sin(d*x+c)^2/a/d^3-1/2*(f*x+e)^2*sin(d*x+c)^2/a/d
```

Rubi [A] time = 0.17, antiderivative size = 161, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {4523, 3296, 2637, 4404, 3310}

$$\frac{2f(e+fx)\cos(c+dx)}{ad^2}-\frac{f(e+fx)\sin(c+dx)\cos(c+dx)}{2ad^2}+\frac{f^2\sin^2(c+dx)}{4ad^3}-\frac{2f^2\sin(c+dx)}{ad^3}-\frac{(e+fx)^2\sin^2(c+}{2ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (e*f*x)/(2*a*d) + (f^2*x^2)/(4*a*d) + (2*f*(e + f*x)*Cos[c + d*x])/(a*d^2)
- (2*f^2*Sin[c + d*x])/(a*d^3) + ((e + f*x)^2*Sin[c + d*x])/(a*d) - (f*(e +
 f*x)*Cos[c + d*x]*Sin[c + d*x])/(2*a*d^2) + (f^2*Sin[c + d*x]^2)/(4*a*d^3)
 - ((e + f*x)^2*Sin[c + d*x]^2)/(2*a*d)
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\cos(c+dx)\,dx}{a} - \frac{\int (e+fx)^2\cos(c+dx)\sin(c+dx)\,dx}{a}$$
$$= \frac{(e+fx)^2\sin(c+dx)}{ad} - \frac{(e+fx)^2\sin^2(c+dx)}{2ad} + \frac{f\int (e+fx)\sin^2(c+dx)\,dx}{ad} - \frac{(2\cdots}{\cdots}$$
$$= \frac{2f(e+fx)\cos(c+dx)}{ad^2} + \frac{(e+fx)^2\sin(c+dx)}{ad} - \frac{f(e+fx)\cos(c+dx)\sin(c+d\cdots}{2ad^2}$$
$$= \frac{efx}{2ad} + \frac{f^2x^2}{4ad} + \frac{2f(e+fx)\cos(c+dx)}{ad^2} - \frac{2f^2\sin(c+dx)}{ad^3} + \frac{(e+fx)^2\sin(c+dx)}{ad} \cdots$$

Mathematica [A] time = 1.09, size = 95, normalized size = 0.59

$$\frac{\cos(2(c+dx))\left(2d^2(e+fx)^2-f^2\right)-4\sin(c+dx)\left(df(e+fx)\cos(c+dx)-2\left(d^2(e+fx)^2-2f^2\right)\right)+16df(e+f\cdots}{8ad^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (16*d*f*(e + f*x)*Cos[c + d*x] + (-f^2 + 2*d^2*(e + f*x)^2)*Cos[2*(c + d*x)
] - 4*(-2*(-2*f^2 + d^2*(e + f*x)^2) + d*f*(e + f*x)*Cos[c + d*x])*Sin[c +
d*x])/(8*a*d^3)
```

fricas [A] time = 0.44, size = 149, normalized size = 0.93

$$-\frac{d^2f^2x^2+2\,d^2efx-\left(2\,d^2f^2x^2+4\,d^2efx+2\,d^2e^2-f^2\right)\cos\left(dx+c\right)^2-8\left(df^2x+def\right)\cos\left(dx+c\right)-2\left(2\,d^2f^2x^2\cdots\right.}{4\,ad^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(d^2*f^2*x^2 + 2*d^2*e*f*x - (2*d^2*f^2*x^2 + 4*d^2*e*f*x + 2*d^2*e^2
- f^2)*cos(d*x + c)^2 - 8*(d*f^2*x + d*e*f)*cos(d*x + c) - 2*(2*d^2*f^2*x^2
 + 4*d^2*e*f*x + 2*d^2*e^2 - 4*f^2 - (d*f^2*x + d*e*f)*cos(d*x + c))*sin(d*
x + c))/(a*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.11, size = 339, normalized size = 2.11

$$-\frac{f^2\left(-\frac{(dx+c)^2\left(\cos^2(dx+c)\right)}{2}+(dx+c)\left(\frac{\cos(dx+c)\sin(dx+c)}{2}+\frac{dx}{2}+\frac{c}{2}\right)-\frac{(dx+c)^2}{4}-\frac{\left(\sin^2(dx+c)\right)}{4}\right)-2cf^2\left(-\frac{(dx+c)\left(\cos^2(dx+c)\right)}{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/d^3/a*(f^2*(-1/2*(d*x+c)^2*cos(d*x+c)^2+(d*x+c)*(1/2*cos(d*x+c)*sin(d*x+
c)+1/2*d*x+1/2*c)-1/4*(d*x+c)^2-1/4*sin(d*x+c)^2)-2*c*f^2*(-1/2*(d*x+c)*cos
(d*x+c)^2+1/4*cos(d*x+c)*sin(d*x+c)+1/4*d*x+1/4*c)+2*d*e*f*(-1/2*(d*x+c)*co
s(d*x+c)^2+1/4*cos(d*x+c)*sin(d*x+c)+1/4*d*x+1/4*c)-1/2*c^2*f^2*cos(d*x+c)^
2+c*d*e*f*cos(d*x+c)^2-1/2*d^2*e^2*cos(d*x+c)^2-f^2*((d*x+c)^2*sin(d*x+c)-2
*sin(d*x+c)+2*(d*x+c)*cos(d*x+c))+2*c*f^2*(cos(d*x+c)+(d*x+c)*sin(d*x+c))-2
*d*e*f*(cos(d*x+c)+(d*x+c)*sin(d*x+c))-sin(d*x+c)*c^2*f^2+2*sin(d*x+c)*c*d*
e*f-sin(d*x+c)*d^2*e^2)
```

maxima [A] time = 0.92, size = 289, normalized size = 1.80

$$-\frac{\frac{4\left(\sin(dx+c)^2-2\sin(dx+c)\right)e^2}{a}-\frac{8\left(\sin(dx+c)^2-2\sin(dx+c)\right)cef}{ad}+\frac{4\left(\sin(dx+c)^2-2\sin(dx+c)\right)c^2f^2}{ad^2}-\frac{2\left(2(dx+c)\cos(2dx+2c)+8(dx+c)\sin(d\right.}{ad}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/8*(4*(sin(d*x + c)^2 - 2*sin(d*x + c))*e^2/a - 8*(sin(d*x + c)^2 - 2*sin
(d*x + c))*c*e*f/(a*d) + 4*(sin(d*x + c)^2 - 2*sin(d*x + c))*c^2*f^2/(a*d^2
) - 2*(2*(d*x + c)*cos(2*d*x + 2*c) + 8*(d*x + c)*sin(d*x + c) + 8*cos(d*x
+ c) - sin(2*d*x + 2*c))*e*f/(a*d) + 2*(2*(d*x + c)*cos(2*d*x + 2*c) + 8*(d
*x + c)*sin(d*x + c) + 8*cos(d*x + c) - sin(2*d*x + 2*c))*c*f^2/(a*d^2) - (
(2*(d*x + c)^2 - 1)*cos(2*d*x + 2*c) + 16*(d*x + c)*cos(d*x + c) - 2*(d*x +
 c)*sin(2*d*x + 2*c) + 8*((d*x + c)^2 - 2)*sin(d*x + c))*f^2/(a*d^2))/d
```

mupad [B] time = 3.20, size = 187, normalized size = 1.16

$$\frac{8\,d^2\,e^2\,\sin\left(c+d\,x\right)-f^2\,\cos\left(2\,c+2\,d\,x\right)-16\,f^2\,\sin\left(c+d\,x\right)+2\,d^2\,e^2\,\cos\left(2\,c+2\,d\,x\right)+8\,d^2\,f^2\,x^2\,\sin\left(c+d\,x\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*(e + f*x)^2)/(a + a*sin(c + d*x)),x)
```

```
[Out] (8*d^2*e^2*sin(c + d*x) - f^2*cos(2*c + 2*d*x) - 16*f^2*sin(c + d*x) + 2*d^
2*e^2*cos(2*c + 2*d*x) + 8*d^2*f^2*x^2*sin(c + d*x) - 2*d*e*f*sin(2*c + 2*d
*x) + 16*d*f^2*x*cos(c + d*x) + 2*d^2*f^2*x^2*cos(2*c + 2*d*x) - 2*d*f^2*x*
sin(2*c + 2*d*x) + 16*d*e*f*cos(c + d*x) + 4*d^2*e*f*x*cos(2*c + 2*d*x) + 1
6*d^2*e*f*x*sin(c + d*x))/(8*a*d^3)
```

sympy [A] time = 12.35, size = 1528, normalized size = 9.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((8*d**2*e**2*tan(c/2 + d*x/2)**3/(4*a*d**3*tan(c/2 + d*x/2)**4 +
8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) - 8*d**2*e**2*tan(c/2 + d*x/2)**2/
(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) +
8*d**2*e**2*tan(c/2 + d*x/2)/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c
/2 + d*x/2)**2 + 4*a*d**3) + 2*d**2*e*f*x*tan(c/2 + d*x/2)**4/(4*a*d**3*tan
(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) + 16*d**2*e*f*x
*tan(c/2 + d*x/2)**3/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x
/2)**2 + 4*a*d**3) - 12*d**2*e*f*x*tan(c/2 + d*x/2)**2/(4*a*d**3*tan(c/2 +
d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) + 16*d**2*e*f*x*tan(c/
2 + d*x/2)/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4
*a*d**3) + 2*d**2*e*f*x/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 +
d*x/2)**2 + 4*a*d**3) + d**2*f**2*x**2*tan(c/2 + d*x/2)**4/(4*a*d**3*tan(c/
2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) + 8*d**2*f**2*x**2
*tan(c/2 + d*x/2)**3/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x
/2)**2 + 4*a*d**3) - 6*d**2*f**2*x**2*tan(c/2 + d*x/2)**2/(4*a*d**3*tan(c/2
```

```
 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) + 8*d**2*f**2*x**2*
tan(c/2 + d*x/2)/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)*
*2 + 4*a*d**3) + d**2*f**2*x**2/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*ta
n(c/2 + d*x/2)**2 + 4*a*d**3) + 4*d*e*f*tan(c/2 + d*x/2)**3/(4*a*d**3*tan(c
/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) + 16*d*e*f*tan(c/
2 + d*x/2)**2/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2
+ 4*a*d**3) - 4*d*e*f*tan(c/2 + d*x/2)/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*
d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) + 16*d*e*f/(4*a*d**3*tan(c/2 + d*x/2)*
*4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) - 8*d*f**2*x*tan(c/2 + d*x/2)
**4/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3
) + 4*d*f**2*x*tan(c/2 + d*x/2)**3/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3
*tan(c/2 + d*x/2)**2 + 4*a*d**3) - 4*d*f**2*x*tan(c/2 + d*x/2)/(4*a*d**3*ta
n(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) + 8*d*f**2*x/(
4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) - 1
6*f**2*tan(c/2 + d*x/2)**3/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2
 + d*x/2)**2 + 4*a*d**3) + 4*f**2*tan(c/2 + d*x/2)**2/(4*a*d**3*tan(c/2 + d
*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3) - 16*f**2*tan(c/2 + d*x
/2)/(4*a*d**3*tan(c/2 + d*x/2)**4 + 8*a*d**3*tan(c/2 + d*x/2)**2 + 4*a*d**3
), Ne(d, 0)), ((e**2*x + e*f*x**2 + f**2*x**3/3)*cos(c)**3/(a*sin(c) + a),
True))
```

3.265 $\int \frac{(e+fx)\cos^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=91

$$\frac{f\cos(c+dx)}{ad^2}-\frac{f\sin(c+dx)\cos(c+dx)}{4ad^2}-\frac{(e+fx)\sin^2(c+dx)}{2ad}+\frac{(e+fx)\sin(c+dx)}{ad}+\frac{fx}{4ad}$$

```
[Out] 1/4*f*x/a/d+f*cos(d*x+c)/a/d^2+(f*x+e)*sin(d*x+c)/a/d-1/4*f*cos(d*x+c)*sin(
d*x+c)/a/d^2-1/2*(f*x+e)*sin(d*x+c)^2/a/d
```

Rubi [A] time = 0.09, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {4523, 3296, 2638, 4404, 2635, 8}

$$\frac{f\cos(c+dx)}{ad^2}-\frac{f\sin(c+dx)\cos(c+dx)}{4ad^2}-\frac{(e+fx)\sin^2(c+dx)}{2ad}+\frac{(e+fx)\sin(c+dx)}{ad}+\frac{fx}{4ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (f*x)/(4*a*d) + (f*Cos[c + d*x])/(a*d^2) + ((e + f*x)*Sin[c + d*x])/(a*d) -
 (f*Cos[c + d*x]*Sin[c + d*x])/(4*a*d^2) - ((e + f*x)*Sin[c + d*x]^2)/(2*a*
d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
```

```
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cos^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)\cos(c+dx)\,dx}{a} - \frac{\int (e+fx)\cos(c+dx)\sin(c+dx)\,dx}{a}$$

$$= \frac{(e+fx)\sin(c+dx)}{ad} - \frac{(e+fx)\sin^2(c+dx)}{2ad} + \frac{f\int \sin^2(c+dx)\,dx}{2ad} - \frac{f\int \sin(c+$$

$$= \frac{f\cos(c+dx)}{ad^2} + \frac{(e+fx)\sin(c+dx)}{ad} - \frac{f\cos(c+dx)\sin(c+dx)}{4ad^2} - \frac{(e+fx)\sin^2(}{2ad}$$

$$= \frac{fx}{4ad} + \frac{f\cos(c+dx)}{ad^2} + \frac{(e+fx)\sin(c+dx)}{ad} - \frac{f\cos(c+dx)\sin(c+dx)}{4ad^2} - \frac{(e+f}{}$$

Mathematica [A] time = 0.95, size = 52, normalized size = 0.57

$$\frac{d(e+fx)(4\sin(c+dx)+\cos(2(c+dx)))-f(\sin(c+dx)-4)\cos(c+dx)}{4ad^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cos[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-(f*Cos[c + d*x]*(-4 + Sin[c + d*x])) + d*(e + f*x)*(Cos[2*(c + d*x)] + 4*
Sin[c + d*x]))/(4*a*d^2)
```

fricas [A] time = 0.43, size = 67, normalized size = 0.74

$$-\frac{dfx - 2\left(dfx + de\right)\cos\left(dx+c\right)^2 - 4f\cos\left(dx+c\right) - \left(4dfx + 4de - f\cos\left(dx+c\right)\right)\sin\left(dx+c\right)}{4ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(d*f*x - 2*(d*f*x + d*e)*cos(d*x + c)^2 - 4*f*cos(d*x + c) - (4*d*f*x
+ 4*d*e - f*cos(d*x + c))*sin(d*x + c))/(a*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.11, size = 114, normalized size = 1.25

$$-\frac{f\left(-\frac{(dx+c)\left(\cos^2(dx+c)\right)}{2}+\frac{\cos(dx+c)\sin(dx+c)}{4}+\frac{dx}{4}+\frac{c}{4}\right)+\frac{cf\left(\cos^2(dx+c)\right)}{2}-\frac{\left(\cos^2(dx+c)\right)de}{2}-f\left(\cos\left(dx+c\right)+\left(dx+c\right)\sin\left(\right.\right.}{d^2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/d^2/a*(f*(-1/2*(d*x+c)*cos(d*x+c)^2+1/4*cos(d*x+c)*sin(d*x+c)+1/4*d*x+1/
4*c)+1/2*c*f*cos(d*x+c)^2-1/2*cos(d*x+c)^2*d*e-f*(cos(d*x+c)+(d*x+c)*sin(d*
x+c))+sin(d*x+c)*c*f-sin(d*x+c)*d*e)
```

maxima [A] time = 0.66, size = 114, normalized size = 1.25

$$-\frac{\frac{4\left(\sin(dx+c)^2-2\sin(dx+c)\right)e}{a}-\frac{4\left(\sin(dx+c)^2-2\sin(dx+c)\right)cf}{ad}-\frac{(2(dx+c)\cos(2dx+2c)+8(dx+c)\sin(dx+c)+8\cos(dx+c)-\sin(2dx+2c))f}{ad}}{8d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/8*(4*(sin(d*x + c)^2 - 2*sin(d*x + c))*e/a - 4*(sin(d*x + c)^2 - 2*sin(d
*x + c))*c*f/(a*d) - (2*(d*x + c)*cos(2*d*x + 2*c) + 8*(d*x + c)*sin(d*x +
c) + 8*cos(d*x + c) - sin(2*d*x + 2*c))*f/(a*d))/d
```

mupad [B] time = 3.04, size = 84, normalized size = 0.92

$$-\frac{\frac{f\sin(2c+2dx)}{2}+8f\sin\left(\frac{c}{2}+\frac{dx}{2}\right)^2-4de\sin\left(c+dx\right)+2de\sin\left(c+dx\right)^2-4dfx\sin\left(c+dx\right)+dfx\left(2\sin\left(c\right.\right.}{4ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*(e + f*x))/(a + a*sin(c + d*x)),x)
```

```
[Out] -((f*sin(2*c + 2*d*x))/2 + 8*f*sin(c/2 + (d*x)/2)^2 - 4*d*e*sin(c + d*x) +
2*d*e*sin(c + d*x)^2 - 4*d*f*x*sin(c + d*x) + d*f*x*(2*sin(c + d*x)^2 - 1))
/(4*a*d^2)
```

sympy [A] time = 7.99, size = 724, normalized size = 7.96

$$\begin{cases} \frac{8de\tan^{3}\left(\frac{c}{2}+\frac{dx}{2}\right)}{4ad^{2}\tan^{4}\left(\frac{c}{2}+\frac{dx}{2}\right)+8ad^{2}\tan^{2}\left(\frac{c}{2}+\frac{dx}{2}\right)+4ad^{2}} - \frac{8de\tan^{2}\left(\frac{c}{2}+\frac{dx}{2}\right)}{4ad^{2}\tan^{4}\left(\frac{c}{2}+\frac{dx}{2}\right)+8ad^{2}\tan^{2}\left(\frac{c}{2}+\frac{dx}{2}\right)+4ad^{2}} + \frac{8de\tan\left(\frac{c}{2}+\frac{dx}{2}\right)}{4ad^{2}\tan^{4}\left(\frac{c}{2}+\frac{dx}{2}\right)+8ad^{2}\tan^{2}\left(\frac{c}{2}+\frac{dx}{2}\right)+4ad^{2}} + \cdots \\ \frac{\left(ex+\frac{fx^{2}}{2}\right)\cos^{3}(c)}{a\sin(c)+a} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((8*d*e*tan(c/2 + d*x/2)**3/(4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d*
*2*tan(c/2 + d*x/2)**2 + 4*a*d**2) - 8*d*e*tan(c/2 + d*x/2)**2/(4*a*d**2*ta
n(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2) + 8*d*e*tan(c/
2 + d*x/2)/(4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4
*a*d**2) + d*f*x*tan(c/2 + d*x/2)**4/(4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d*
*2*tan(c/2 + d*x/2)**2 + 4*a*d**2) + 8*d*f*x*tan(c/2 + d*x/2)**3/(4*a*d**2*
tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2) - 6*d*f*x*ta
n(c/2 + d*x/2)**2/(4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)
**2 + 4*a*d**2) + 8*d*f*x*tan(c/2 + d*x/2)/(4*a*d**2*tan(c/2 + d*x/2)**4 +
8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2) + d*f*x/(4*a*d**2*tan(c/2 + d*x/2)
**4 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2) + 2*f*tan(c/2 + d*x/2)**3/(4
*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2) + 8*
f*tan(c/2 + d*x/2)**2/(4*a*d**2*tan(c/2 + d*x/2)**4 + 8*a*d**2*tan(c/2 + d*
x/2)**2 + 4*a*d**2) - 2*f*tan(c/2 + d*x/2)/(4*a*d**2*tan(c/2 + d*x/2)**4 +
8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2) + 8*f/(4*a*d**2*tan(c/2 + d*x/2)**
4 + 8*a*d**2*tan(c/2 + d*x/2)**2 + 4*a*d**2), Ne(d, 0)), ((e*x + f*x**2/2)*
cos(c)**3/(a*sin(c) + a), True))
```

3.266 $\int \frac{\cos^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=32

$$\frac{\sin(c+dx)}{ad}-\frac{\sin^2(c+dx)}{2ad}$$

```
[Out] sin(d*x+c)/a/d-1/2*sin(d*x+c)^2/a/d
```

Rubi [A] time = 0.05, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {2667}

$$\frac{\sin(c+dx)}{ad}-\frac{\sin^2(c+dx)}{2ad}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[c + d*x]^3/(a + a*Sin[c + d*x]),x]
```

```
[Out] Sin[c + d*x]/(a*d) - Sin[c + d*x]^2/(2*a*d)
```

Rule 2667

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^(m + (p - 1)/2)*(a - x)
^((p - 1)/2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && In
tegerQ[(p - 1)/2] && EqQ[a^2 - b^2, 0] && (GeQ[p, -1] ||  !IntegerQ[m + 1/2
])
```

Rubi steps

$$\begin{aligned}\int \frac{\cos^3(c+dx)}{a+a\sin(c+dx)}\,dx &= \frac{\text{Subst}\left(\int (a-x)\,dx,x,a\sin(c+dx)\right)}{a^3d}\\ &= \frac{\sin(c+dx)}{ad}-\frac{\sin^2(c+dx)}{2ad}\end{aligned}$$

Mathematica [A] time = 0.04, size = 24, normalized size = 0.75

$$-\frac{(\sin(c+dx)-2)\sin(c+dx)}{2ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[c + d*x]^3/(a + a*Sin[c + d*x]),x]
[Out] -1/2*((-2 + Sin[c + d*x])*Sin[c + d*x])/(a*d)
```

fricas [A] time = 0.42, size = 25, normalized size = 0.78

$$\frac{\cos(dx+c)^2 + 2\sin(dx+c)}{2\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] 1/2*(cos(d*x + c)^2 + 2*sin(d*x + c))/(a*d)
```

giac [A] time = 1.03, size = 25, normalized size = 0.78

$$-\frac{\sin(dx+c)^2 - 2\sin(dx+c)}{2\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] -1/2*(sin(d*x + c)^2 - 2*sin(d*x + c))/(a*d)
```

maple [A] time = 0.05, size = 28, normalized size = 0.88

$$-\frac{\frac{\left(\sin^2(dx+c)\right)}{2} - \sin(dx+c)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^3/(a+a*sin(d*x+c)),x)
[Out] -1/a/d*(1/2*sin(d*x+c)^2-sin(d*x+c))
```

maxima [A] time = 0.43, size = 25, normalized size = 0.78

$$-\frac{\sin(dx+c)^2 - 2\sin(dx+c)}{2\,ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] -1/2*(sin(d*x + c)^2 - 2*sin(d*x + c))/(a*d)
```

mupad [B] time = 2.64, size = 22, normalized size = 0.69

$$-\frac{\sin\left(c+d\,x\right)\,\left(\sin\left(c+d\,x\right)-2\right)}{2\,a\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)^3/(a + a*sin(c + d*x)),x)
```

```
[Out] -(sin(c + d*x)*(sin(c + d*x) - 2))/(2*a*d)
```

sympy [A] time = 5.38, size = 158, normalized size = 4.94

$$\begin{cases} \frac{2\tan^{3}\left(\frac{c}{2}+\frac{dx}{2}\right)}{ad\tan^{4}\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad\tan^{2}\left(\frac{c}{2}+\frac{dx}{2}\right)+ad} - \frac{2\tan^{2}\left(\frac{c}{2}+\frac{dx}{2}\right)}{ad\tan^{4}\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad\tan^{2}\left(\frac{c}{2}+\frac{dx}{2}\right)+ad} + \frac{2\tan\left(\frac{c}{2}+\frac{dx}{2}\right)}{ad\tan^{4}\left(\frac{c}{2}+\frac{dx}{2}\right)+2ad\tan^{2}\left(\frac{c}{2}+\frac{dx}{2}\right)+ad} & \text{for}\: d \neq 0 \\ \frac{x\cos^{3}\left(c\right)}{a\sin\left(c\right)+a} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] Piecewise((2*tan(c/2 + d*x/2)**3/(a*d*tan(c/2 + d*x/2)**4 + 2*a*d*tan(c/2 +
 d*x/2)**2 + a*d) - 2*tan(c/2 + d*x/2)**2/(a*d*tan(c/2 + d*x/2)**4 + 2*a*d*
tan(c/2 + d*x/2)**2 + a*d) + 2*tan(c/2 + d*x/2)/(a*d*tan(c/2 + d*x/2)**4 +
2*a*d*tan(c/2 + d*x/2)**2 + a*d), Ne(d, 0)), (x*cos(c)**3/(a*sin(c) + a), T
rue))
```

3.267 $\int \frac{\cos^3(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=128

$$-\frac{\sin\left(2c-\frac{2de}{f}\right)\text{Ci}\left(\frac{2de}{f}+2dx\right)}{2af}+\frac{\cos\left(c-\frac{de}{f}\right)\text{Ci}\left(\frac{de}{f}+dx\right)}{af}-\frac{\sin\left(c-\frac{de}{f}\right)\text{Si}\left(\frac{de}{f}+dx\right)}{af}-\frac{\cos\left(2c-\frac{2de}{f}\right)\text{Si}\left(\frac{2de}{f}+2d\right.}{2af}$$

```
[Out] Ci(d*e/f+d*x)*cos(c-d*e/f)/a/f-1/2*cos(2*c-2*d*e/f)*Si(2*d*e/f+2*d*x)/a/f-1
/2*Ci(2*d*e/f+2*d*x)*sin(2*c-2*d*e/f)/a/f-Si(d*e/f+d*x)*sin(c-d*e/f)/a/f
```

Rubi [A] time = 0.30, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4523, 3303, 3299, 3302, 4406, 12}

$$-\frac{\sin\left(2c-\frac{2de}{f}\right)\text{CosIntegral}\left(\frac{2de}{f}+2dx\right)}{2af}+\frac{\cos\left(c-\frac{de}{f}\right)\text{CosIntegral}\left(\frac{de}{f}+dx\right)}{af}-\frac{\sin\left(c-\frac{de}{f}\right)\text{Si}\left(\frac{de}{f}+dx\right)}{af}-\frac{\cos\left(2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] (Cos[c - (d*e)/f]*CosIntegral[(d*e)/f + d*x])/(a*f) - (CosIntegral[(2*d*e)/
f + 2*d*x]*Sin[2*c - (2*d*e)/f])/(2*a*f) - (Sin[c - (d*e)/f]*SinIntegral[(d
*e)/f + d*x])/(a*f) - (Cos[2*c - (2*d*e)/f]*SinIntegral[(2*d*e)/f + 2*d*x])
/(2*a*f)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\int \frac{\cos^3(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx = \frac{\int \frac{\cos(c+dx)}{e+fx}\,dx}{a} - \frac{\int \frac{\cos(c+dx)\sin(c+dx)}{e+fx}\,dx}{a}$$

$$= -\frac{\int \frac{\sin(2c+2dx)}{2(e+fx)}\,dx}{a} + \frac{\cos\left(c-\frac{de}{f}\right)\int \frac{\cos\left(\frac{de}{f}+dx\right)}{e+fx}\,dx}{a} - \frac{\sin\left(c-\frac{de}{f}\right)\int \frac{\sin\left(\frac{de}{f}+dx\right)}{e+fx}\,dx}{a}$$

$$= \frac{\cos\left(c-\frac{de}{f}\right)\mathrm{Ci}\left(\frac{de}{f}+dx\right)}{af} - \frac{\sin\left(c-\frac{de}{f}\right)\mathrm{Si}\left(\frac{de}{f}+dx\right)}{af} - \frac{\int \frac{\sin(2c+2dx)}{e+fx}\,dx}{2a}$$

$$= \frac{\cos\left(c-\frac{de}{f}\right)\mathrm{Ci}\left(\frac{de}{f}+dx\right)}{af} - \frac{\sin\left(c-\frac{de}{f}\right)\mathrm{Si}\left(\frac{de}{f}+dx\right)}{af} - \frac{\cos\left(2c-\frac{2de}{f}\right)\int \frac{\sin\left(\frac{2d}{f}\right.}{e+}}{2a}$$

$$= \frac{\cos\left(c-\frac{de}{f}\right)\mathrm{Ci}\left(\frac{de}{f}+dx\right)}{af} - \frac{\mathrm{Ci}\left(\frac{2de}{f}+2dx\right)\sin\left(2c-\frac{2de}{f}\right)}{2af} - \frac{\sin\left(c-\frac{de}{f}\right)\mathrm{Si}\left(\frac{de}{f}\right.}{af}$$

Mathematica [A] time = 0.40, size = 105, normalized size = 0.82

$$-\frac{\sin\left(2c-\frac{2de}{f}\right)\mathrm{Ci}\left(\frac{2d(e+fx)}{f}\right)-2\cos\left(c-\frac{de}{f}\right)\mathrm{Ci}\left(d\left(\frac{e}{f}+x\right)\right)+2\sin\left(c-\frac{de}{f}\right)\mathrm{Si}\left(d\left(\frac{e}{f}+x\right)\right)+\cos\left(2c-\frac{2de}{f}\right)\mathrm{Si}\left(\frac{2}{}\right.}{2af}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] -1/2*(-2*Cos[c - (d*e)/f]*CosIntegral[d*(e/f + x)] + CosIntegral[(2*d*(e +
f*x))/f]*Sin[2*c - (2*d*e)/f] + 2*Sin[c - (d*e)/f]*SinIntegral[d*(e/f + x)]
 + Cos[2*c - (2*d*e)/f]*SinIntegral[(2*d*(e + f*x))/f])/(a*f)
```

fricas [A] time = 0.44, size = 157, normalized size = 1.23

$$\frac{2\left(\mathrm{Ci}\left(\frac{dfx+de}{f}\right)+\mathrm{Ci}\left(-\frac{dfx+de}{f}\right)\right)\cos\left(-\frac{de-cf}{f}\right)-\left(\mathrm{Ci}\left(\frac{2\left(dfx+de\right)}{f}\right)+\mathrm{Ci}\left(-\frac{2\left(dfx+de\right)}{f}\right)\right)\sin\left(-\frac{2\left(de-cf\right)}{f}\right)-2\cos\left(-\frac{2\left(de\right.}{f}\right.}{4af}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*(cos_integral((d*f*x + d*e)/f) + cos_integral(-(d*f*x + d*e)/f))*cos
(-(d*e - c*f)/f) - (cos_integral(2*(d*f*x + d*e)/f) + cos_integral(-2*(d*f*
x + d*e)/f))*sin(-2*(d*e - c*f)/f) - 2*cos(-2*(d*e - c*f)/f)*sin_integral(2
*(d*f*x + d*e)/f) - 4*sin(-(d*e - c*f)/f)*sin_integral((d*f*x + d*e)/f))/(a
*f)
```

giac [C] time = 4.17, size = 4828, normalized size = 37.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/8*(3*pi + 3*pi*tan(1/2*c)^4*tan(d*e/f)^2*tan(1/2*d*e/f)^2 - 2*imag_part(
cos_integral(2*d*x + 2*d*e/f))*tan(1/2*c)^4*tan(d*e/f)^2*tan(1/2*d*e/f)^2 +
 2*imag_part(cos_integral(-2*d*x - 2*d*e/f))*tan(1/2*c)^4*tan(d*e/f)^2*tan(
1/2*d*e/f)^2 - 4*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^4*tan(d*e/
f)^2*tan(1/2*d*e/f)^2 - 4*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^
4*tan(d*e/f)^2*tan(1/2*d*e/f)^2 - 4*sin_integral(2*(d*f*x + d*e)/f)*tan(1/2
*c)^4*tan(d*e/f)^2*tan(1/2*d*e/f)^2 + 8*imag_part(cos_integral(d*x + d*e/f)
)*tan(1/2*c)^4*tan(d*e/f)^2*tan(1/2*d*e/f) - 8*imag_part(cos_integral(-d*x
- d*e/f))*tan(1/2*c)^4*tan(d*e/f)^2*tan(1/2*d*e/f) + 16*sin_integral((d*f*x
```

```
 + d*e)/f)*tan(1/2*c)^4*tan(d*e/f)^2*tan(1/2*d*e/f) - 4*real_part(cos_integ
ral(2*d*x + 2*d*e/f))*tan(1/2*c)^4*tan(d*e/f)*tan(1/2*d*e/f)^2 - 4*real_par
t(cos_integral(-2*d*x - 2*d*e/f))*tan(1/2*c)^4*tan(d*e/f)*tan(1/2*d*e/f)^2
- 8*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^3*tan(d*e/f)^2*tan(1/2*
d*e/f)^2 + 8*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^3*tan(d*e/f)^
2*tan(1/2*d*e/f)^2 + 8*real_part(cos_integral(2*d*x + 2*d*e/f))*tan(1/2*c)^
3*tan(d*e/f)^2*tan(1/2*d*e/f)^2 + 8*real_part(cos_integral(-2*d*x - 2*d*e/f
))*tan(1/2*c)^3*tan(d*e/f)^2*tan(1/2*d*e/f)^2 - 16*sin_integral((d*f*x + d*
e)/f)*tan(1/2*c)^3*tan(d*e/f)^2*tan(1/2*d*e/f)^2 + 3*pi*tan(1/2*c)^4*tan(d*
e/f)^2 - 2*imag_part(cos_integral(2*d*x + 2*d*e/f))*tan(1/2*c)^4*tan(d*e/f)
^2 + 2*imag_part(cos_integral(-2*d*x - 2*d*e/f))*tan(1/2*c)^4*tan(d*e/f)^2
+ 4*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^4*tan(d*e/f)^2 + 4*real
_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^4*tan(d*e/f)^2 - 4*sin_integra
l(2*(d*f*x + d*e)/f)*tan(1/2*c)^4*tan(d*e/f)^2 - 16*real_part(cos_integral(
d*x + d*e/f))*tan(1/2*c)^3*tan(d*e/f)^2*tan(1/2*d*e/f) - 16*real_part(cos_i
ntegral(-d*x - d*e/f))*tan(1/2*c)^3*tan(d*e/f)^2*tan(1/2*d*e/f) + 3*pi*tan(
1/2*c)^4*tan(1/2*d*e/f)^2 + 2*imag_part(cos_integral(2*d*x + 2*d*e/f))*tan(
1/2*c)^4*tan(1/2*d*e/f)^2 - 2*imag_part(cos_integral(-2*d*x - 2*d*e/f))*tan
(1/2*c)^4*tan(1/2*d*e/f)^2 - 4*real_part(cos_integral(d*x + d*e/f))*tan(1/2
*c)^4*tan(1/2*d*e/f)^2 - 4*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)
^4*tan(1/2*d*e/f)^2 + 4*sin_integral(2*(d*f*x + d*e)/f)*tan(1/2*c)^4*tan(1/
2*d*e/f)^2 - 16*imag_part(cos_integral(2*d*x + 2*d*e/f))*tan(1/2*c)^3*tan(d
*e/f)*tan(1/2*d*e/f)^2 + 16*imag_part(cos_integral(-2*d*x - 2*d*e/f))*tan(1
/2*c)^3*tan(d*e/f)*tan(1/2*d*e/f)^2 - 32*sin_integral(2*(d*f*x + d*e)/f)*ta
n(1/2*c)^3*tan(d*e/f)*tan(1/2*d*e/f)^2 + 6*pi*tan(1/2*c)^2*tan(d*e/f)^2*tan
(1/2*d*e/f)^2 + 12*imag_part(cos_integral(2*d*x + 2*d*e/f))*tan(1/2*c)^2*ta
n(d*e/f)^2*tan(1/2*d*e/f)^2 - 12*imag_part(cos_integral(-2*d*x - 2*d*e/f))*
tan(1/2*c)^2*tan(d*e/f)^2*tan(1/2*d*e/f)^2 + 24*sin_integral(2*(d*f*x + d*e
)/f)*tan(1/2*c)^2*tan(d*e/f)^2*tan(1/2*d*e/f)^2 - 4*real_part(cos_integral(
2*d*x + 2*d*e/f))*tan(1/2*c)^4*tan(d*e/f) - 4*real_part(cos_integral(-2*d*x
 - 2*d*e/f))*tan(1/2*c)^4*tan(d*e/f) + 8*imag_part(cos_integral(d*x + d*e/f
))*tan(1/2*c)^3*tan(d*e/f)^2 - 8*imag_part(cos_integral(-d*x - d*e/f))*tan(
1/2*c)^3*tan(d*e/f)^2 + 8*real_part(cos_integral(2*d*x + 2*d*e/f))*tan(1/2*
c)^3*tan(d*e/f)^2 + 8*real_part(cos_integral(-2*d*x - 2*d*e/f))*tan(1/2*c)^
3*tan(d*e/f)^2 + 16*sin_integral((d*f*x + d*e)/f)*tan(1/2*c)^3*tan(d*e/f)^2
 + 8*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^4*tan(1/2*d*e/f) - 8*i
mag_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^4*tan(1/2*d*e/f) + 16*sin_i
ntegral((d*f*x + d*e)/f)*tan(1/2*c)^4*tan(1/2*d*e/f) - 8*imag_part(cos_inte
gral(d*x + d*e/f))*tan(1/2*c)^3*tan(1/2*d*e/f)^2 + 8*imag_part(cos_integral
(-d*x - d*e/f))*tan(1/2*c)^3*tan(1/2*d*e/f)^2 - 8*real_part(cos_integral(2*
d*x + 2*d*e/f))*tan(1/2*c)^3*tan(1/2*d*e/f)^2 - 8*real_part(cos_integral(-2
*d*x - 2*d*e/f))*tan(1/2*c)^3*tan(1/2*d*e/f)^2 - 16*sin_integral((d*f*x + d
*e)/f)*tan(1/2*c)^3*tan(1/2*d*e/f)^2 + 24*real_part(cos_integral(2*d*x + 2*
d*e/f))*tan(1/2*c)^2*tan(d*e/f)*tan(1/2*d*e/f)^2 + 24*real_part(cos_integra
l(-2*d*x - 2*d*e/f))*tan(1/2*c)^2*tan(d*e/f)*tan(1/2*d*e/f)^2 - 8*imag_part
```

(cos_integral(d*x + d*e/f))*tan(1/2*c)*tan(d*e/f)^2*tan(1/2*d*e/f)^2 + 8*im
ag_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)*tan(d*e/f)^2*tan(1/2*d*e/f)^
2 - 8*real_part(cos_integral(2*d*x + 2*d*e/f))*tan(1/2*c)*tan(d*e/f)^2*tan(
1/2*d*e/f)^2 - 8*real_part(cos_integral(-2*d*x - 2*d*e/f))*tan(1/2*c)*tan(d
*e/f)^2*tan(1/2*d*e/f)^2 - 16*sin_integral((d*f*x + d*e)/f)*tan(1/2*c)*tan(
d*e/f)^2*tan(1/2*d*e/f)^2 + 3*pi*tan(1/2*c)^4 + 2*imag_part(cos_integral(2*
d*x + 2*d*e/f))*tan(1/2*c)^4 - 2*imag_part(cos_integral(-2*d*x - 2*d*e/f))*
tan(1/2*c)^4 + 4*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^4 + 4*real
_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^4 + 4*sin_integral(2*(d*f*x +
d*e)/f)*tan(1/2*c)^4 - 16*imag_part(cos_integral(2*d*x + 2*d*e/f))*tan(1/2*
c)^3*tan(d*e/f) + 16*imag_part(cos_integral(-2*d*x - 2*d*e/f))*tan(1/2*c)^3
*tan(d*e/f) - 32*sin_integral(2*(d*f*x + d*e)/f)*tan(1/2*c)^3*tan(d*e/f) +
6*pi*tan(1/2*c)^2*tan(d*e/f)^2 + 12*imag_part(cos_integral(2*d*x + 2*d*e/f)
)*tan(1/2*c)^2*tan(d*e/f)^2 - 12*imag_part(cos_integral(-2*d*x - 2*d*e/f))*
tan(1/2*c)^2*tan(d*e/f)^2 + 24*sin_integral(2*(d*f*x + d*e)/f)*tan(1/2*c)^2
*tan(d*e/f)^2 - 16*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^3*tan(1/
2*d*e/f) - 16*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^3*tan(1/2*d*
e/f) - 16*real_part(cos_integral(d*x + d*e/f))*tan(1/2*c)*tan(d*e/f)^2*tan(
1/2*d*e/f) - 16*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)*tan(d*e/f)
^2*tan(1/2*d*e/f) + 6*pi*tan(1/2*c)^2*tan(1/2*d*e/f)^2 - 12*imag_part(cos_i
ntegral(2*d*x + 2*d*e/f))*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + 12*imag_part(cos_
integral(-2*d*x - 2*d*e/f))*tan(1/2*c)^2*tan(1/2*d*e/f)^2 - 24*sin_integral
(2*(d*f*x + d*e)/f)*tan(1/2*c)^2*tan(1/2*d*e/f)^2 + 16*imag_part(cos_integr
al(2*d*x + 2*d*e/f))*tan(1/2*c)*tan(d*e/f)*tan(1/2*d*e/f)^2 - 16*imag_part(
cos_integral(-2*d*x - 2*d*e/f))*tan(1/2*c)*tan(d*e/f)*tan(1/2*d*e/f)^2 + 32
sin_integral(2(d*f*x + d*e)/f)*tan(1/2*c)*tan(d*e/f)*tan(1/2*d*e/f)^2 + 3
*pi*tan(d*e/f)^2*tan(1/2*d*e/f)^2 - 2*imag_part(cos_integral(2*d*x + 2*d*e/
f))*tan(d*e/f)^2*tan(1/2*d*e/f)^2 + 2*imag_part(cos_integral(-2*d*x - 2*d*e
/f))*tan(d*e/f)^2*tan(1/2*d*e/f)^2 + 4*real_part(cos_integral(d*x + d*e/f))
*tan(d*e/f)^2*tan(1/2*d*e/f)^2 + 4*real_part(cos_integral(-d*x - d*e/f))*ta
n(d*e/f)^2*tan(1/2*d*e/f)^2 - 4*sin_integral(2*(d*f*x + d*e)/f)*tan(d*e/f)^
2*tan(1/2*d*e/f)^2 + 8*imag_part(cos_integral(d*x + d*e/f))*tan(1/2*c)^3 -
8*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*c)^3 - 8*real_part(cos_inte
gral(2*d*x + 2*d*e/f))*tan(1/2*c)^3 - 8*real_part(cos_integral(-2*d*x - 2*d
*e/f))*tan(1/2*c)^3 + 16*sin_integral((d*f*x + d*e)/f)*tan(1/2*c)^3 + 24*re
al_part(cos_integral(2*d*x + 2*d*e/f))*tan(1/2*c)^2*tan(d*e/f) + 24*real_pa
rt(cos_integral(-2*d*x - 2*d*e/f))*tan(1/2*c)^2*tan(d*e/f) + 8*imag_part(co
s_integral(d*x + d*e/f))*tan(1/2*c)*tan(d*e/f)^2 - 8*imag_part(cos_integral
(-d*x - d*e/f))*tan(1/2*c)*tan(d*e/f)^2 - 8*real_part(cos_integral(2*d*x +
2*d*e/f))*tan(1/2*c)*tan(d*e/f)^2 - 8*real_part(cos_integral(-2*d*x - 2*d*e
/f))*tan(1/2*c)*tan(d*e/f)^2 + 16*sin_integral((d*f*x + d*e)/f)*tan(1/2*c)*
tan(d*e/f)^2 - 8*imag_part(cos_integral(d*x + d*e/f))*tan(d*e/f)^2*tan(1/2*
d*e/f) + 8*imag_part(cos_integral(-d*x - d*e/f))*tan(d*e/f)^2*tan(1/2*d*e/f
) - 16*sin_integral((d*f*x + d*e)/f)*tan(d*e/f)^2*tan(1/2*d*e/f) - 8*imag_p
art(cos_integral(d*x + d*e/f))*tan(1/2*c)*tan(1/2*d*e/f)^2 + 8*imag_part(co

```
s_integral(-d*x - d*e/f))*tan(1/2*c)*tan(1/2*d*e/f)^2 + 8*real_part(cos_int
egral(2*d*x + 2*d*e/f))*tan(1/2*c)*tan(1/2*d*e/f)^2 + 8*real_part(cos_integ
ral(-2*d*x - 2*d*e/f))*tan(1/2*c)*tan(1/2*d*e/f)^2 - 16*sin_integral((d*f*x
 + d*e)/f)*tan(1/2*c)*tan(1/2*d*e/f)^2 - 4*real_part(cos_integral(2*d*x + 2
*d*e/f))*tan(d*e/f)*tan(1/2*d*e/f)^2 - 4*real_part(cos_integral(-2*d*x - 2*
d*e/f))*tan(d*e/f)*tan(1/2*d*e/f)^2 + 6*pi*tan(1/2*c)^2 - 12*imag_part(cos_
integral(2*d*x + 2*d*e/f))*tan(1/2*c)^2 + 12*imag_part(cos_integral(-2*d*x
- 2*d*e/f))*tan(1/2*c)^2 - 24*sin_integral(2*(d*f*x + d*e)/f)*tan(1/2*c)^2
+ 16*imag_part(cos_integral(2*d*x + 2*d*e/f))*tan(1/2*c)*tan(d*e/f) - 16*im
ag_part(cos_integral(-2*d*x - 2*d*e/f))*tan(1/2*c)*tan(d*e/f) + 32*sin_inte
gral(2*(d*f*x + d*e)/f)*tan(1/2*c)*tan(d*e/f) + 3*pi*tan(d*e/f)^2 - 2*imag_
part(cos_integral(2*d*x + 2*d*e/f))*tan(d*e/f)^2 + 2*imag_part(cos_integral
(-2*d*x - 2*d*e/f))*tan(d*e/f)^2 - 4*real_part(cos_integral(d*x + d*e/f))*t
an(d*e/f)^2 - 4*real_part(cos_integral(-d*x - d*e/f))*tan(d*e/f)^2 - 4*sin_
integral(2*(d*f*x + d*e)/f)*tan(d*e/f)^2 - 16*real_part(cos_integral(d*x +
d*e/f))*tan(1/2*c)*tan(1/2*d*e/f) - 16*real_part(cos_integral(-d*x - d*e/f)
)*tan(1/2*c)*tan(1/2*d*e/f) + 3*pi*tan(1/2*d*e/f)^2 + 2*imag_part(cos_integ
ral(2*d*x + 2*d*e/f))*tan(1/2*d*e/f)^2 - 2*imag_part(cos_integral(-2*d*x -
2*d*e/f))*tan(1/2*d*e/f)^2 + 4*real_part(cos_integral(d*x + d*e/f))*tan(1/2
*d*e/f)^2 + 4*real_part(cos_integral(-d*x - d*e/f))*tan(1/2*d*e/f)^2 + 4*si
n_integral(2*(d*f*x + d*e)/f)*tan(1/2*d*e/f)^2 + 8*imag_part(cos_integral(d
*x + d*e/f))*tan(1/2*c) - 8*imag_part(cos_integral(-d*x - d*e/f))*tan(1/2*c
) + 8*real_part(cos_integral(2*d*x + 2*d*e/f))*tan(1/2*c) + 8*real_part(cos
_integral(-2*d*x - 2*d*e/f))*tan(1/2*c) + 16*sin_integral((d*f*x + d*e)/f)*
tan(1/2*c) - 4*real_part(cos_integral(2*d*x + 2*d*e/f))*tan(d*e/f) - 4*real
_part(cos_integral(-2*d*x - 2*d*e/f))*tan(d*e/f) - 8*imag_part(cos_integral
(d*x + d*e/f))*tan(1/2*d*e/f) + 8*imag_part(cos_integral(-d*x - d*e/f))*tan
(1/2*d*e/f) - 16*sin_integral((d*f*x + d*e)/f)*tan(1/2*d*e/f) + 2*imag_part
(cos_integral(2*d*x + 2*d*e/f)) - 2*imag_part(cos_integral(-2*d*x - 2*d*e/f
)) - 4*real_part(cos_integral(d*x + d*e/f)) - 4*real_part(cos_integral(-d*x
 - d*e/f)) + 4*sin_integral(2*(d*f*x + d*e)/f))/(a*f*tan(1/2*c)^4*tan(d*e/f
)^2*tan(1/2*d*e/f)^2 + a*f*tan(1/2*c)^4*tan(d*e/f)^2 + a*f*tan(1/2*c)^4*tan
(1/2*d*e/f)^2 + 2*a*f*tan(1/2*c)^2*tan(d*e/f)^2*tan(1/2*d*e/f)^2 + a*f*tan(
1/2*c)^4 + 2*a*f*tan(1/2*c)^2*tan(d*e/f)^2 + 2*a*f*tan(1/2*c)^2*tan(1/2*d*e
/f)^2 + a*f*tan(d*e/f)^2*tan(1/2*d*e/f)^2 + 2*a*f*tan(1/2*c)^2 + a*f*tan(d*
e/f)^2 + a*f*tan(1/2*d*e/f)^2 + a*f)
```

maple [A] time = 0.11, size = 161, normalized size = 1.26

$$-\frac{\frac{\mathrm{Si}\left(2dx+2c+\frac{-2cf+2de}{f}\right)\cos\left(\frac{-2cf+2de}{f}\right)}{2f}-\frac{\mathrm{Ci}\left(2dx+2c+\frac{-2cf+2de}{f}\right)\sin\left(\frac{-2cf+2de}{f}\right)}{2f}-\frac{\mathrm{Si}\left(dx+c+\frac{-cf+de}{f}\right)\sin\left(\frac{-cf+de}{f}\right)}{f}-\frac{\mathrm{Ci}\left(dx+c+\frac{-cf+de}{f}\right)\cos\left(\frac{-cf+de}{f}\right)}{f}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/a*(1/2*Si(2*d*x+2*c+2*(-c*f+d*e)/f)*cos(2*(-c*f+d*e)/f)/f-1/2*Ci(2*d*x+2
*c+2*(-c*f+d*e)/f)*sin(2*(-c*f+d*e)/f)/f-Si(d*x+c+(-c*f+d*e)/f)*sin((-c*f+d
*e)/f)/f-Ci(d*x+c+(-c*f+d*e)/f)*cos((-c*f+d*e)/f)/f)
```

maxima [C] time = 0.82, size = 280, normalized size = 2.19

$$-\frac{2\,d\left(E_1\left(\frac{i\,de+i\,(dx+c)f-i\,cf}{f}\right)+E_1\left(-\frac{i\,de+i\,(dx+c)f-i\,cf}{f}\right)\right)\cos\left(-\frac{de-cf}{f}\right)-d\left(i\,E_1\left(\frac{2i\,de+2i\,(dx+c)f-2i\,cf}{f}\right)-i\,E_1\left(-\frac{2i\,de+2i\,(dx+}{f}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/4*(2*d*(exp_integral_e(1, (I*d*e + I*(d*x + c)*f - I*c*f)/f) + exp_integ
ral_e(1, -(I*d*e + I*(d*x + c)*f - I*c*f)/f))*cos(-(d*e - c*f)/f) - d*(I*ex
p_integral_e(1, (2*I*d*e + 2*I*(d*x + c)*f - 2*I*c*f)/f) - I*exp_integral_e
(1, -(2*I*d*e + 2*I*(d*x + c)*f - 2*I*c*f)/f))*cos(-2*(d*e - c*f)/f) - d*(2
*I*exp_integral_e(1, (I*d*e + I*(d*x + c)*f - I*c*f)/f) - 2*I*exp_integral_
e(1, -(I*d*e + I*(d*x + c)*f - I*c*f)/f))*sin(-(d*e - c*f)/f) - d*(exp_inte
gral_e(1, (2*I*d*e + 2*I*(d*x + c)*f - 2*I*c*f)/f) + exp_integral_e(1, -(2*
I*d*e + 2*I*(d*x + c)*f - 2*I*c*f)/f))*sin(-2*(d*e - c*f)/f))/(a*d*f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cos\left(c+d\,x\right)^3}{\left(e+f\,x\right)\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)^3/((e + f*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] int(cos(c + d*x)^3/((e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.268 $\int \frac{\cos^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=175

$$-\frac{d\sin\left(c-\frac{de}{f}\right)\mathrm{Ci}\left(\frac{de}{f}+dx\right)}{af^2}-\frac{d\cos\left(2c-\frac{2de}{f}\right)\mathrm{Ci}\left(\frac{2de}{f}+2dx\right)}{af^2}+\frac{d\sin\left(2c-\frac{2de}{f}\right)\mathrm{Si}\left(\frac{2de}{f}+2dx\right)}{af^2}-\frac{d\cos\left(c-\frac{de}{f}\right)\mathrm{Si}\left(\frac{d}{f}\right.}{af^2}$$

```
[Out] -d*Ci(2*d*e/f+2*d*x)*cos(2*c-2*d*e/f)/a/f^2-cos(d*x+c)/a/f/(f*x+e)-d*cos(c-
d*e/f)*Si(d*e/f+d*x)/a/f^2+d*Si(2*d*e/f+2*d*x)*sin(2*c-2*d*e/f)/a/f^2-d*Ci(
d*e/f+d*x)*sin(c-d*e/f)/a/f^2+1/2*sin(2*d*x+2*c)/a/f/(f*x+e)
```

Rubi [A] time = 0.33, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4523, 3297, 3303, 3299, 3302, 4406, 12}

$$-\frac{d\sin\left(c-\frac{de}{f}\right)\text{CosIntegral}\left(\frac{de}{f}+dx\right)}{af^2}-\frac{d\cos\left(2c-\frac{2de}{f}\right)\text{CosIntegral}\left(\frac{2de}{f}+2dx\right)}{af^2}+\frac{d\sin\left(2c-\frac{2de}{f}\right)\mathrm{Si}\left(\frac{2de}{f}+2dx\right.}{af^2}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] -(Cos[c + d*x]/(a*f*(e + f*x))) - (d*Cos[2*c - (2*d*e)/f]*CosIntegral[(2*d*
e)/f + 2*d*x])/(a*f^2) - (d*CosIntegral[(d*e)/f + d*x]*Sin[c - (d*e)/f])/(a
*f^2) + Sin[2*c + 2*d*x]/(2*a*f*(e + f*x)) - (d*Cos[c - (d*e)/f]*SinIntegra
l[(d*e)/f + d*x])/(a*f^2) + (d*Sin[2*c - (2*d*e)/f]*SinIntegral[(2*d*e)/f +
 2*d*x])/(a*f^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 3297

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[((
c + d*x)^(m + 1)*Sin[e + f*x])/(d*(m + 1)), x] - Dist[f/(d*(m + 1)), Int[(c
 + d*x)^(m + 1)*Cos[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && LtQ[m, -1
]
```

Rule 3299

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[SinInte
gral[e + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*e - c*f, 0]
```

Rule 3302

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Simp[CosInte
gral[e - Pi/2 + f*x]/d, x] /; FreeQ[{c, d, e, f}, x] && EqQ[d*(e - Pi/2) -
c*f, 0]
```

Rule 3303

```
Int[sin[(e_.) + (f_.)*(x_)]/((c_.) + (d_.)*(x_)), x_Symbol] :> Dist[Cos[(d*
e - c*f)/d], Int[Sin[(c*f)/d + f*x]/(c + d*x), x], x] + Dist[Sin[(d*e - c*f
)/d], Int[Cos[(c*f)/d + f*x]/(c + d*x), x], x] /; FreeQ[{c, d, e, f}, x] &&
 NeQ[d*e - c*f, 0]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\int \frac{\cos^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx = \frac{\int \frac{\cos(c+dx)}{(e+fx)^2}\,dx}{a} - \frac{\int \frac{\cos(c+dx)\sin(c+dx)}{(e+fx)^2}\,dx}{a}$$

$$= -\frac{\cos(c+dx)}{af(e+fx)} - \frac{\int \frac{\sin(2c+2dx)}{2(e+fx)^2}\,dx}{a} - \frac{d\int \frac{\sin(c+dx)}{e+fx}\,dx}{af}$$

$$= -\frac{\cos(c+dx)}{af(e+fx)} - \frac{\int \frac{\sin(2c+2dx)}{(e+fx)^2}\,dx}{2a} - \frac{\left(d\cos\left(c-\frac{de}{f}\right)\right)\int \frac{\sin\left(\frac{de}{f}+dx\right)}{e+fx}\,dx}{af} - \frac{\left(d\sin\left(c\right.\right.}{}$$

$$= -\frac{\cos(c+dx)}{af(e+fx)} - \frac{d\text{Ci}\left(\frac{de}{f}+dx\right)\sin\left(c-\frac{de}{f}\right)}{af^2} + \frac{\sin(2c+2dx)}{2af(e+fx)} - \frac{d\cos\left(c-\frac{de}{f}\right)}{af}$$

$$= -\frac{\cos(c+dx)}{af(e+fx)} - \frac{d\text{Ci}\left(\frac{de}{f}+dx\right)\sin\left(c-\frac{de}{f}\right)}{af^2} + \frac{\sin(2c+2dx)}{2af(e+fx)} - \frac{d\cos\left(c-\frac{de}{f}\right)}{af}$$

$$= -\frac{\cos(c+dx)}{af(e+fx)} - \frac{d\cos\left(2c-\frac{2de}{f}\right)\text{Ci}\left(\frac{2de}{f}+2dx\right)}{af^2} - \frac{d\text{Ci}\left(\frac{de}{f}+dx\right)\sin\left(c-\frac{de}{f}\right)}{af^2}$$

Mathematica [A] time = 0.62, size = 203, normalized size = 1.16

$$\frac{-2d(e+fx)\sin\left(c-\frac{de}{f}\right)\text{Ci}\left(d\left(\frac{e}{f}+x\right)\right) - 2d(e+fx)\cos\left(2c-\frac{2de}{f}\right)\text{Ci}\left(\frac{2d(e+fx)}{f}\right) + 2de\sin\left(2c-\frac{2de}{f}\right)\text{Si}\left(\frac{2d(e+fx)}{f}\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] (-2*f*Cos[c + d*x] - 2*d*(e + f*x)*Cos[2*c - (2*d*e)/f]*CosIntegral[(2*d*(e
 + f*x))/f] - 2*d*(e + f*x)*CosIntegral[d*(e/f + x)]*Sin[c - (d*e)/f] + f*S
in[2*(c + d*x)] - 2*d*e*Cos[c - (d*e)/f]*SinIntegral[d*(e/f + x)] - 2*d*f*x
*Cos[c - (d*e)/f]*SinIntegral[d*(e/f + x)] + 2*d*e*Sin[2*c - (2*d*e)/f]*Sin
Integral[(2*d*(e + f*x))/f] + 2*d*f*x*Sin[2*c - (2*d*e)/f]*SinIntegral[(2*d
*(e + f*x))/f])/(2*a*f^2*(e + f*x))
```

fricas [A] time = 0.47, size = 242, normalized size = 1.38

$$\frac{2f\cos(dx+c)\sin(dx+c) + 2\left(dfx+de\right)\sin\left(-\frac{2\left(de-cf\right)}{f}\right)\text{Si}\left(\frac{2\left(dfx+de\right)}{f}\right) - 2\left(dfx+de\right)\cos\left(-\frac{de-cf}{f}\right)\text{Si}\left(\frac{dfx+de}{f}\right) -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*f*cos(d*x + c)*sin(d*x + c) + 2*(d*f*x + d*e)*sin(-2*(d*e - c*f)/f)*
sin_integral(2*(d*f*x + d*e)/f) - 2*(d*f*x + d*e)*cos(-(d*e - c*f)/f)*sin_i
ntegral((d*f*x + d*e)/f) - 2*f*cos(d*x + c) - ((d*f*x + d*e)*cos_integral(2
*(d*f*x + d*e)/f) + (d*f*x + d*e)*cos_integral(-2*(d*f*x + d*e)/f))*cos(-2*
(d*e - c*f)/f) - ((d*f*x + d*e)*cos_integral((d*f*x + d*e)/f) + (d*f*x + d*
e)*cos_integral(-(d*f*x + d*e)/f))*sin(-(d*e - c*f)/f))/(a*f^3*x + a*e*f^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.11, size = 230, normalized size = 1.31

$$-\frac{d\left(-\frac{\sin(2dx+2c)}{2\left((dx+c)f-cf+de\right)f}+\frac{\frac{2\,\mathrm{Si}\left(2dx+2c+\frac{-2cf+2de}{f}\right)\sin\left(\frac{-2cf+2de}{f}\right)}{f}+\frac{2\,\mathrm{Ci}\left(2dx+2c+\frac{-2cf+2de}{f}\right)\cos\left(\frac{-2cf+2de}{f}\right)}{f}}{2f}+\frac{\cos(dx+c)}{\left((dx+c)f-cf+de\right)f}+\frac{\mathrm{Si}\left(dx+c+\frac{-cf+de}{f}\right)\cdots}{f}\cdots\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] -d/a*(-1/2*sin(2*d*x+2*c)/((d*x+c)*f-c*f+d*e)/f+1/2*(2*Si(2*d*x+2*c+2*(-c*f
+d*e)/f)*sin(2*(-c*f+d*e)/f)/f+2*Ci(2*d*x+2*c+2*(-c*f+d*e)/f)*cos(2*(-c*f+d
*e)/f)/f)/f+cos(d*x+c)/((d*x+c)*f-c*f+d*e)/f+(Si(d*x+c+(-c*f+d*e)/f)*cos((-
c*f+d*e)/f)/f-Ci(d*x+c+(-c*f+d*e)/f)*sin((-c*f+d*e)/f)/f)/f)
```

maxima [C] time = 0.51, size = 307, normalized size = 1.75

$$-\frac{2\,d^2\left(E_2\left(\frac{i\,de+i\,(dx+c)f-i\,cf}{f}\right)+E_2\left(-\frac{i\,de+i\,(dx+c)f-i\,cf}{f}\right)\right)\cos\left(-\frac{de-cf}{f}\right)-d^2\left(i\,E_2\left(\frac{2i\,de+2i\,(dx+c)f-2i\,cf}{f}\right)-i\,E_2\left(-\frac{2i\,de+2i\,(d\cdots}{\cdots}\right)\cdots\right)}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/4*(2*d^2*(exp_integral_e(2, (I*d*e + I*(d*x + c)*f - I*c*f)/f) + exp_int
egral_e(2, -(I*d*e + I*(d*x + c)*f - I*c*f)/f))*cos(-(d*e - c*f)/f) - d^2*(
I*exp_integral_e(2, (2*I*d*e + 2*I*(d*x + c)*f - 2*I*c*f)/f) - I*exp_integr
al_e(2, -(2*I*d*e + 2*I*(d*x + c)*f - 2*I*c*f)/f))*cos(-2*(d*e - c*f)/f) -
d^2*(2*I*exp_integral_e(2, (I*d*e + I*(d*x + c)*f - I*c*f)/f) - 2*I*exp_int
egral_e(2, -(I*d*e + I*(d*x + c)*f - I*c*f)/f))*sin(-(d*e - c*f)/f) - d^2*(
exp_integral_e(2, (2*I*d*e + 2*I*(d*x + c)*f - 2*I*c*f)/f) + exp_integral_e
(2, -(2*I*d*e + 2*I*(d*x + c)*f - 2*I*c*f)/f))*sin(-2*(d*e - c*f)/f))/((a*d
*e*f + (d*x + c)*a*f^2 - a*c*f^2)*d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cos\left(c+d\,x\right)^3}{{\left(e+f\,x\right)}^2\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)^3/((e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(cos(c + d*x)^3/((e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**3/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.269 $\int \frac{(e+fx)^3 \sec(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=502

$$\frac{3if^3\text{Li}_2\left(-ie^{i(c+dx)}\right)}{ad^4}-\frac{3if^3\text{Li}_2\left(ie^{i(c+dx)}\right)}{ad^4}-\frac{3if^3\text{Li}_2\left(-e^{2i(c+dx)}\right)}{2ad^4}-\frac{3if^3\text{Li}_4\left(-ie^{i(c+dx)}\right)}{ad^4}+\frac{3if^3\text{Li}_4\left(ie^{i(c+dx)}\right)}{ad^4}-\frac{3f^2(e+f}{}$$

```
[Out] -3/2*I*f*(f*x+e)^2/a/d^2+3*I*f^3*polylog(2,-I*exp(I*(d*x+c)))/a/d^4+3/2*I*f
*(f*x+e)^2*polylog(2,-I*exp(I*(d*x+c)))/a/d^2+3*f^2*(f*x+e)*ln(1+exp(2*I*(d
*x+c)))/a/d^3-3/2*I*f^3*polylog(2,-exp(2*I*(d*x+c)))/a/d^4-6*I*f^2*(f*x+e)*
arctan(exp(I*(d*x+c)))/a/d^3-3/2*I*f*(f*x+e)^2*polylog(2,I*exp(I*(d*x+c)))/
a/d^2-I*(f*x+e)^3*arctan(exp(I*(d*x+c)))/a/d+3*I*f^3*polylog(4,I*exp(I*(d*x
+c)))/a/d^4-3*f^2*(f*x+e)*polylog(3,-I*exp(I*(d*x+c)))/a/d^3+3*f^2*(f*x+e)*
polylog(3,I*exp(I*(d*x+c)))/a/d^3-3*I*f^3*polylog(2,I*exp(I*(d*x+c)))/a/d^4
-3*I*f^3*polylog(4,-I*exp(I*(d*x+c)))/a/d^4-3/2*f*(f*x+e)^2*sec(d*x+c)/a/d^
2-1/2*(f*x+e)^3*sec(d*x+c)^2/a/d+3/2*f*(f*x+e)^2*tan(d*x+c)/a/d^2+1/2*(f*x+
e)^3*sec(d*x+c)*tan(d*x+c)/a/d
```

Rubi [A] time = 0.49, antiderivative size = 502, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 13, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4531, 4186, 4181, 2279, 2391, 2531, 6609, 2282, 6589, 4409, 4184, 3719, 2190}

$$-\frac{3f^2(e+fx)\text{PolyLog}\left(3,-ie^{i(c+dx)}\right)}{ad^3}+\frac{3f^2(e+fx)\text{PolyLog}\left(3,ie^{i(c+dx)}\right)}{ad^3}+\frac{3if(e+fx)^2\text{PolyLog}\left(2,-ie^{i(c+dx)}\right)}{2ad^2}-\frac{3}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sec[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (((-3*I)/2)*f*(e + f*x)^2)/(a*d^2) - ((6*I)*f^2*(e + f*x)*ArcTan[E^(I*(c +
d*x))])/(a*d^3) - (I*(e + f*x)^3*ArcTan[E^(I*(c + d*x))])/(a*d) + (3*f^2*(e
 + f*x)*Log[1 + E^((2*I)*(c + d*x))])/(a*d^3) + ((3*I)*f^3*PolyLog[2, (-I)*
E^(I*(c + d*x))])/(a*d^4) + (((3*I)/2)*f*(e + f*x)^2*PolyLog[2, (-I)*E^(I*(
c + d*x))])/(a*d^2) - ((3*I)*f^3*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^4) - (
((3*I)/2)*f*(e + f*x)^2*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^2) - (((3*I)/2)
*f^3*PolyLog[2, -E^((2*I)*(c + d*x))])/(a*d^4) - (3*f^2*(e + f*x)*PolyLog[3
, (-I)*E^(I*(c + d*x))])/(a*d^3) + (3*f^2*(e + f*x)*PolyLog[3, I*E^(I*(c +
d*x))])/(a*d^3) - ((3*I)*f^3*PolyLog[4, (-I)*E^(I*(c + d*x))])/(a*d^4) + ((
3*I)*f^3*PolyLog[4, I*E^(I*(c + d*x))])/(a*d^4) - (3*f*(e + f*x)^2*Sec[c +
d*x])/(2*a*d^2) - ((e + f*x)^3*Sec[c + d*x]^2)/(2*a*d) + (3*f*(e + f*x)^2*T
an[c + d*x])/(2*a*d^2) + ((e + f*x)^3*Sec[c + d*x]*Tan[c + d*x])/(2*a*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
```

```
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4531

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sec[c +
d*x]^(n + 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Sec[c + d*x]^(n + 1)*Tan[c
 + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && EqQ[a^2
 - b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
```

```
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\sec(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\sec^3(c+dx)\,dx}{a} - \frac{\int (e+fx)^3\sec^2(c+dx)\tan(c+dx)\,dx}{a}$$

$$= -\frac{3f(e+fx)^2\sec(c+dx)}{2ad^2} - \frac{(e+fx)^3\sec^2(c+dx)}{2ad} + \frac{(e+fx)^3\sec(c+dx)\tan(c+\ldots}{2ad}$$

$$= -\frac{6if^2(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{i(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{3f(e+fx)^2\sec(c+dx\ldots}{2ad^2}$$

$$= -\frac{3if(e+fx)^2}{2ad^2} - \frac{6if^2(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{i(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{3if(e+\ldots}{}$$

$$= -\frac{3if(e+fx)^2}{2ad^2} - \frac{6if^2(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{i(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{3f^2(e\ldots}{}$$

$$= -\frac{3if(e+fx)^2}{2ad^2} - \frac{6if^2(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{i(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{3f^2(e\ldots}{}$$

$$= -\frac{3if(e+fx)^2}{2ad^2} - \frac{6if^2(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{i(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{3f^2(e\ldots}{}$$

Mathematica [A] time = 8.98, size = 865, normalized size = 1.72

$$-\frac{(e+fx)^3}{2ad\left(\cos\left(\frac{c}{2}+\frac{dx}{2}\right)+\sin\left(\frac{c}{2}+\frac{dx}{2}\right)\right)^2} - \frac{(\cos(c)+i\sin(c))\left(\frac{(\cos(c)-i\sin(c))(e+fx)^4}{4f} + \frac{\log(-i\cos(c+dx)-\sin(c+dx)+1)(-i\cos(c)-\sin\ldots}{d}\ldots\right.}{\ldots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sec[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] (x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3))/(8*a*(Cos[c/2] - Sin[c/2])*
(Cos[c/2] + Sin[c/2])) - ((Cos[c] + I*Sin[c])*(((e + f*x)^3*Log[1 - I*Cos[c
 + d*x] - Sin[c + d*x]]*(1 - I*Cos[c] - Sin[c]))/d + ((e + f*x)^4*(Cos[c] -
 I*Sin[c]))/(4*f) + (3*f*(d^2*(e + f*x)^2*PolyLog[2, I*Cos[c + d*x] + Sin[c
 + d*x]] - (2*I)*d*f*(e + f*x)*PolyLog[3, I*Cos[c + d*x] + Sin[c + d*x]] -
2*f^2*PolyLog[4, I*Cos[c + d*x] + Sin[c + d*x]])*(Cos[c] + I*(-1 + Sin[c]))
*(I*Cos[c] + Sin[c]))/d^4))/(2*a*(Cos[c] + I*(-1 + Sin[c]))) - ((12*f^2 + d
```

```
^2*(e + f*x)^2)^2 + 12*f^2*(d^2*e^2 + 4*f^2)*PolyLog[2, (-I)*Cos[c + d*x] -
 Sin[c + d*x]]*(1 - I*Cos[c] + Sin[c]) + 24*d*e*f^3*(d*x*PolyLog[2, (-I)*Co
s[c + d*x] - Sin[c + d*x]] - I*PolyLog[3, (-I)*Cos[c + d*x] - Sin[c + d*x]]
)*(1 - I*Cos[c] + Sin[c]) + 12*f^4*(d^2*x^2*PolyLog[2, (-I)*Cos[c + d*x] -
Sin[c + d*x]] - (2*I)*d*x*PolyLog[3, (-I)*Cos[c + d*x] - Sin[c + d*x]] - 2*
PolyLog[4, (-I)*Cos[c + d*x] - Sin[c + d*x]])*(1 - I*Cos[c] + Sin[c]) - 12*
d*f^2*(d^2*e^2 + 4*f^2)*x*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(Cos[c] +
I*(1 + Sin[c])) - 12*d^3*e*f^3*x^2*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(
Cos[c] + I*(1 + Sin[c])) - 4*d^3*f^4*x^3*Log[1 + I*Cos[c + d*x] + Sin[c + d
*x]]*(Cos[c] + I*(1 + Sin[c])) + (4*I)*d*e*f*(d^2*e^2 + 12*f^2)*(d*x + I*Lo
g[Cos[c + d*x] + I*(1 + Sin[c + d*x])])*(Cos[c] + I*(1 + Sin[c])))/(8*a*d^4
*f*(Cos[c] + I*(1 + Sin[c]))) - (e + f*x)^3/(2*a*d*(Cos[c/2 + (d*x)/2] + Si
n[c/2 + (d*x)/2])^2) + (3*(e^2*f*Sin[(d*x)/2] + 2*e*f^2*x*Sin[(d*x)/2] + f^
3*x^2*Sin[(d*x)/2]))/(a*d^2*(Cos[c/2] + Sin[c/2])*(Cos[c/2 + (d*x)/2] + Sin
[c/2 + (d*x)/2]))
```

fricas [C] time = 0.68, size = 1884, normalized size = 3.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(2*d^3*f^3*x^3 + 6*d^3*e*f^2*x^2 + 6*d^3*e^2*f*x + 2*d^3*e^3 + 6*(d^2*
f^3*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f)*cos(d*x + c) - (-3*I*d^2*f^3*x^2 - 6*I
*d^2*e*f^2*x - 3*I*d^2*e^2*f + (-3*I*d^2*f^3*x^2 - 6*I*d^2*e*f^2*x - 3*I*d^
2*e^2*f)*sin(d*x + c))*dilog(I*cos(d*x + c) + sin(d*x + c)) - (-3*I*d^2*f^3
*x^2 - 6*I*d^2*e*f^2*x - 3*I*d^2*e^2*f - 12*I*f^3 + (-3*I*d^2*f^3*x^2 - 6*I
*d^2*e*f^2*x - 3*I*d^2*e^2*f - 12*I*f^3)*sin(d*x + c))*dilog(I*cos(d*x + c)
 - sin(d*x + c)) - (3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^2*f + (3*
I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^2*f)*sin(d*x + c))*dilog(-I*cos
(d*x + c) + sin(d*x + c)) - (3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^
2*f + 12*I*f^3 + (3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^2*f + 12*I*
f^3)*sin(d*x + c))*dilog(-I*cos(d*x + c) - sin(d*x + c)) - (d^3*e^3 - 3*c*d
^2*e^2*f + 3*(c^2 + 4)*d*e*f^2 - (c^3 + 12*c)*f^3 + (d^3*e^3 - 3*c*d^2*e^2*
f + 3*(c^2 + 4)*d*e*f^2 - (c^3 + 12*c)*f^3)*sin(d*x + c))*log(cos(d*x + c)
+ I*sin(d*x + c) + I) + (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3
+ (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*sin(d*x + c))*log(cos
(d*x + c) - I*sin(d*x + c) + I) - (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*c*d^2*
e^2*f - 3*c^2*d*e*f^2 + (c^3 + 12*c)*f^3 + 3*(d^3*e^2*f + 4*d*f^3)*x + (d^3
*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + (c^3 + 12*c)*f
^3 + 3*(d^3*e^2*f + 4*d*f^3)*x)*sin(d*x + c))*log(I*cos(d*x + c) + sin(d*x
+ c) + 1) + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f
- 3*c^2*d*e*f^2 + c^3*f^3 + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x
+ 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*sin(d*x + c))*log(I*cos(d*x + c)
```

```
 - sin(d*x + c) + 1) - (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*c
^2*d*e*f^2 + (c^3 + 12*c)*f^3 + 3*(d^3*e^2*f + 4*d*f^3)*x + (d^3*f^3*x^3 +
3*d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + (c^3 + 12*c)*f^3 + 3*(d^3
*e^2*f + 4*d*f^3)*x)*sin(d*x + c))*log(-I*cos(d*x + c) + sin(d*x + c) + 1)
+ (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*
e*f^2 + c^3*f^3 + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*
e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*sin(d*x + c))*log(-I*cos(d*x + c) - sin(d*
x + c) + 1) - (d^3*e^3 - 3*c*d^2*e^2*f + 3*(c^2 + 4)*d*e*f^2 - (c^3 + 12*c)
*f^3 + (d^3*e^3 - 3*c*d^2*e^2*f + 3*(c^2 + 4)*d*e*f^2 - (c^3 + 12*c)*f^3)*s
in(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + I) + (d^3*e^3 - 3*c*d^2*e
^2*f + 3*c^2*d*e*f^2 - c^3*f^3 + (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 -
 c^3*f^3)*sin(d*x + c))*log(-cos(d*x + c) - I*sin(d*x + c) + I) - (6*I*f^3*
sin(d*x + c) + 6*I*f^3)*polylog(4, I*cos(d*x + c) + sin(d*x + c)) - (6*I*f^
3*sin(d*x + c) + 6*I*f^3)*polylog(4, I*cos(d*x + c) - sin(d*x + c)) - (-6*I
*f^3*sin(d*x + c) - 6*I*f^3)*polylog(4, -I*cos(d*x + c) + sin(d*x + c)) - (
-6*I*f^3*sin(d*x + c) - 6*I*f^3)*polylog(4, -I*cos(d*x + c) - sin(d*x + c))
 + 6*(d*f^3*x + d*e*f^2 + (d*f^3*x + d*e*f^2)*sin(d*x + c))*polylog(3, I*co
s(d*x + c) + sin(d*x + c)) - 6*(d*f^3*x + d*e*f^2 + (d*f^3*x + d*e*f^2)*sin
(d*x + c))*polylog(3, I*cos(d*x + c) - sin(d*x + c)) + 6*(d*f^3*x + d*e*f^2
 + (d*f^3*x + d*e*f^2)*sin(d*x + c))*polylog(3, -I*cos(d*x + c) + sin(d*x +
 c)) - 6*(d*f^3*x + d*e*f^2 + (d*f^3*x + d*e*f^2)*sin(d*x + c))*polylog(3,
-I*cos(d*x + c) - sin(d*x + c)))/(a*d^4*sin(d*x + c) + a*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \sec\left(dx+c\right)}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sec(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.42, size = 1265, normalized size = 2.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sec(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] -I*(d*f^3*x^3*exp(I*(d*x+c))+3*d*e*f^2*x^2*exp(I*(d*x+c))+3*d*e^2*f*x*exp(I
*(d*x+c))+d*e^3*exp(I*(d*x+c))+3*f^3*x^2-3*I*f^3*x^2*exp(I*(d*x+c))+6*e*f^2
*x-6*I*e*f^2*x*exp(I*(d*x+c))+3*e^2*f-3*I*e^2*f*exp(I*(d*x+c)))/d^2/(exp(I*
(d*x+c))+I)^2/a+3/2/a/d^3*ln(1+I*exp(I*(d*x+c)))*c^2*e*f^2-3/2/a/d*ln(1+I*e
```

```
xp(I*(d*x+c)))*e*f^2*x^2+3/2*I/a/d^2*e^2*f*polylog(2,-I*exp(I*(d*x+c)))+3/2
*I/a/d^2*f^3*polylog(2,-I*exp(I*(d*x+c)))*x^2+1/2/d/a*f^3*ln(1-I*exp(I*(d*x
+c)))*x^3-3/2/d^3/a*e*f^2*c^2*ln(1-I*exp(I*(d*x+c)))-3/2/d^2/a*e^2*f*c*ln(e
xp(I*(d*x+c))+I)+3/2/d^3/a*e*f^2*c^2*ln(exp(I*(d*x+c))+I)+3/2/d/a*e^2*f*ln(
1-I*exp(I*(d*x+c)))*x+3/2/d^2/a*e^2*f*ln(1-I*exp(I*(d*x+c)))*c+1/2/d/a*ln(e
xp(I*(d*x+c))+I)*e^3+3/2/d/a*e*f^2*ln(1-I*exp(I*(d*x+c)))*x^2+3/2/a/d^2*e^2
*f*c*ln(exp(I*(d*x+c))-I)-3/2/a/d*ln(1+I*exp(I*(d*x+c)))*e^2*f*x-3/2/a/d^2*
ln(1+I*exp(I*(d*x+c)))*c*e^2*f-3/2*I/a/d^2*f^3*polylog(2,I*exp(I*(d*x+c)))*
x^2-6*I/a/d^3*f^3*c*x-3/2*I/a/d^2*e^2*f*polylog(2,I*exp(I*(d*x+c)))-1/2/a/d
*e^3*ln(exp(I*(d*x+c))-I)+1/2/d^4/a*f^3*c^3*ln(1-I*exp(I*(d*x+c)))+3/d^3/a*
f^3*polylog(3,I*exp(I*(d*x+c)))*x-1/2/d^4/a*f^3*c^3*ln(exp(I*(d*x+c))+I)+3/
d^3/a*e*f^2*polylog(3,I*exp(I*(d*x+c)))-3/2/a/d^3*e*f^2*c^2*ln(exp(I*(d*x+c
))-I)-1/2/a/d*f^3*ln(1+I*exp(I*(d*x+c)))*x^3-1/2/a/d^4*f^3*ln(1+I*exp(I*(d*
x+c)))*c^3-3/a/d^3*f^3*polylog(3,-I*exp(I*(d*x+c)))*x-3*I/a/d^2*f^3*x^2-6*I
/a/d^4*f^3*polylog(2,I*exp(I*(d*x+c)))-3*I/a/d^4*c^2*f^3+3*I*f^3*polylog(4,
I*exp(I*(d*x+c)))/a/d^4-3*I*f^3*polylog(4,-I*exp(I*(d*x+c)))/a/d^4-3*I/a/d^
2*polylog(2,I*exp(I*(d*x+c)))*e*f^2*x+3*I/a/d^2*polylog(2,-I*exp(I*(d*x+c))
)*e*f^2*x-6/a/d^3*e*f^2*ln(exp(I*(d*x+c)))+6/a/d^3*e*f^2*ln(exp(I*(d*x+c))+
I)-3/a/d^3*e*f^2*polylog(3,-I*exp(I*(d*x+c)))+6/a/d^4*f^3*c*ln(exp(I*(d*x+c
)))-6/a/d^4*f^3*c*ln(exp(I*(d*x+c))+I)+1/2/a/d^4*f^3*c^3*ln(exp(I*(d*x+c))-
I)+6/a/d^3*f^3*ln(1-I*exp(I*(d*x+c)))*x+6/a/d^4*f^3*ln(1-I*exp(I*(d*x+c)))*
c
```

maxima [B] time = 1.80, size = 3825, normalized size = 7.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/4*(3*c*e^2*f*(2/(a*d*sin(d*x + c) + a*d) - log(sin(d*x + c) + 1)/(a*d) +
log(sin(d*x + c) - 1)/(a*d)) + e^3*(log(sin(d*x + c) + 1)/a - log(sin(d*x +
 c) - 1)/a - 2/(a*sin(d*x + c) + a)) - 4*(12*d^2*e^2*f - 24*c*d*e*f^2 + 12*
c^2*f^3 + (6*(c^2 + 4)*d*e*f^2 - 2*(c^3 + 12*c)*f^3 - 2*(3*(c^2 + 4)*d*e*f^
2 - (c^3 + 12*c)*f^3)*cos(2*d*x + 2*c) - ((12*I*c^2 + 48*I)*d*e*f^2 + (-4*I
*c^3 - 48*I*c)*f^3)*cos(d*x + c) - ((6*I*c^2 + 24*I)*d*e*f^2 + (-2*I*c^3 -
24*I*c)*f^3)*sin(2*d*x + 2*c) + 4*(3*(c^2 + 4)*d*e*f^2 - (c^3 + 12*c)*f^3)*
sin(d*x + c))*arctan2(sin(d*x + c) + 1, cos(d*x + c)) - (6*c^2*d*e*f^2 - 2*
c^3*f^3 - 2*(3*c^2*d*e*f^2 - c^3*f^3)*cos(2*d*x + 2*c) + (-12*I*c^2*d*e*f^2
 + 4*I*c^3*f^3)*cos(d*x + c) + (-6*I*c^2*d*e*f^2 + 2*I*c^3*f^3)*sin(2*d*x +
 2*c) + 4*(3*c^2*d*e*f^2 - c^3*f^3)*sin(d*x + c))*arctan2(sin(d*x + c) - 1,
 cos(d*x + c)) - (2*(d*x + c)^3*f^3 + 6*(d*e*f^2 - c*f^3)*(d*x + c)^2 + 6*(
d^2*e^2*f - 2*c*d*e*f^2 + (c^2 + 4)*f^3)*(d*x + c) - 2*((d*x + c)^3*f^3 + 3
*(d*e*f^2 - c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + (c^2 + 4)*f^3
)*(d*x + c))*cos(2*d*x + 2*c) + (-4*I*(d*x + c)^3*f^3 + (-12*I*d*e*f^2 + 12
```

```
*I*c*f^3)*(d*x + c)^2 + (-12*I*d^2*e^2*f + 24*I*c*d*e*f^2 + (-12*I*c^2 - 48
*I)*f^3)*(d*x + c))*cos(d*x + c) + (-2*I*(d*x + c)^3*f^3 + (-6*I*d*e*f^2 +
6*I*c*f^3)*(d*x + c)^2 + (-6*I*d^2*e^2*f + 12*I*c*d*e*f^2 + (-6*I*c^2 - 24*
I)*f^3)*(d*x + c))*sin(2*d*x + 2*c) + 4*((d*x + c)^3*f^3 + 3*(d*e*f^2 - c*f
^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + (c^2 + 4)*f^3)*(d*x + c))*si
n(d*x + c))*arctan2(cos(d*x + c), sin(d*x + c) + 1) - (2*(d*x + c)^3*f^3 +
6*(d*e*f^2 - c*f^3)*(d*x + c)^2 + 6*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*(d*
x + c) - 2*((d*x + c)^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*
f - 2*c*d*e*f^2 + c^2*f^3)*(d*x + c))*cos(2*d*x + 2*c) + (-4*I*(d*x + c)^3*
f^3 + (-12*I*d*e*f^2 + 12*I*c*f^3)*(d*x + c)^2 + (-12*I*d^2*e^2*f + 24*I*c*
d*e*f^2 - 12*I*c^2*f^3)*(d*x + c))*cos(d*x + c) + (-2*I*(d*x + c)^3*f^3 + (
-6*I*d*e*f^2 + 6*I*c*f^3)*(d*x + c)^2 + (-6*I*d^2*e^2*f + 12*I*c*d*e*f^2 -
6*I*c^2*f^3)*(d*x + c))*sin(2*d*x + 2*c) + 4*((d*x + c)^3*f^3 + 3*(d*e*f^2
- c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*(d*x + c))*sin
(d*x + c))*arctan2(cos(d*x + c), -sin(d*x + c) + 1) + 12*((d*x + c)^2*f^3 +
 2*(d*e*f^2 - c*f^3)*(d*x + c))*cos(2*d*x + 2*c) + (4*(d*x + c)^3*f^3 - 12*
I*d^2*e^2*f + 12*(c^2 + 2*I*c)*d*e*f^2 - 4*(c^3 + 3*I*c^2)*f^3 + (12*d*e*f^
2 - (12*c - 12*I)*f^3)*(d*x + c)^2 + (12*d^2*e^2*f - (24*c - 24*I)*d*e*f^2
+ 12*(c^2 - 2*I*c)*f^3)*(d*x + c))*cos(d*x + c) - (6*d^2*e^2*f - 12*c*d*e*f
^2 + 6*(d*x + c)^2*f^3 + 6*(c^2 + 4)*f^3 + 12*(d*e*f^2 - c*f^3)*(d*x + c) -
 6*(d^2*e^2*f - 2*c*d*e*f^2 + (d*x + c)^2*f^3 + (c^2 + 4)*f^3 + 2*(d*e*f^2
- c*f^3)*(d*x + c))*cos(2*d*x + 2*c) + (-12*I*d^2*e^2*f + 24*I*c*d*e*f^2 -
12*I*(d*x + c)^2*f^3 + (-12*I*c^2 - 48*I)*f^3 + (-24*I*d*e*f^2 + 24*I*c*f^3
)*(d*x + c))*cos(d*x + c) + (-6*I*d^2*e^2*f + 12*I*c*d*e*f^2 - 6*I*(d*x + c
)^2*f^3 + (-6*I*c^2 - 24*I)*f^3 + (-12*I*d*e*f^2 + 12*I*c*f^3)*(d*x + c))*s
in(2*d*x + 2*c) + 12*(d^2*e^2*f - 2*c*d*e*f^2 + (d*x + c)^2*f^3 + (c^2 + 4)
*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*sin(d*x + c))*dilog(I*e^(I*d*x + I*c)
) + (6*d^2*e^2*f - 12*c*d*e*f^2 + 6*(d*x + c)^2*f^3 + 6*c^2*f^3 + 12*(d*e*f
^2 - c*f^3)*(d*x + c) - 6*(d^2*e^2*f - 2*c*d*e*f^2 + (d*x + c)^2*f^3 + c^2*
f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*cos(2*d*x + 2*c) - (12*I*d^2*e^2*f - 2
4*I*c*d*e*f^2 + 12*I*(d*x + c)^2*f^3 + 12*I*c^2*f^3 + (24*I*d*e*f^2 - 24*I*
c*f^3)*(d*x + c))*cos(d*x + c) - (6*I*d^2*e^2*f - 12*I*c*d*e*f^2 + 6*I*(d*x
 + c)^2*f^3 + 6*I*c^2*f^3 + (12*I*d*e*f^2 - 12*I*c*f^3)*(d*x + c))*sin(2*d*
x + 2*c) + 12*(d^2*e^2*f - 2*c*d*e*f^2 + (d*x + c)^2*f^3 + c^2*f^3 + 2*(d*e
*f^2 - c*f^3)*(d*x + c))*sin(d*x + c))*dilog(-I*e^(I*d*x + I*c)) - (I*(d*x
+ c)^3*f^3 + (3*I*c^2 + 12*I)*d*e*f^2 + (-I*c^3 - 12*I*c)*f^3 + (3*I*d*e*f^
2 - 3*I*c*f^3)*(d*x + c)^2 + (3*I*d^2*e^2*f - 6*I*c*d*e*f^2 + (3*I*c^2 + 12
*I)*f^3)*(d*x + c) + (-I*(d*x + c)^3*f^3 + (-3*I*c^2 - 12*I)*d*e*f^2 + (I*c
^3 + 12*I*c)*f^3 + (-3*I*d*e*f^2 + 3*I*c*f^3)*(d*x + c)^2 + (-3*I*d^2*e^2*f
 + 6*I*c*d*e*f^2 + (-3*I*c^2 - 12*I)*f^3)*(d*x + c))*cos(2*d*x + 2*c) + 2*(
(d*x + c)^3*f^3 + 3*(c^2 + 4)*d*e*f^2 - (c^3 + 12*c)*f^3 + 3*(d*e*f^2 - c*f
^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + (c^2 + 4)*f^3)*(d*x + c))*co
s(d*x + c) + ((d*x + c)^3*f^3 + 3*(c^2 + 4)*d*e*f^2 - (c^3 + 12*c)*f^3 + 3*
(d*e*f^2 - c*f^3)*(d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + (c^2 + 4)*f^3)
*(d*x + c))*sin(2*d*x + 2*c) + (2*I*(d*x + c)^3*f^3 + (6*I*c^2 + 24*I)*d*e*
```

```
f^2 + (-2*I*c^3 - 24*I*c)*f^3 + (6*I*d*e*f^2 - 6*I*c*f^3)*(d*x + c)^2 + (6*
I*d^2*e^2*f - 12*I*c*d*e*f^2 + (6*I*c^2 + 24*I)*f^3)*(d*x + c))*sin(d*x + c
))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) - (-3*I*c^2*d*
e*f^2 - I*(d*x + c)^3*f^3 + I*c^3*f^3 + (-3*I*d*e*f^2 + 3*I*c*f^3)*(d*x + c
)^2 + (-3*I*d^2*e^2*f + 6*I*c*d*e*f^2 - 3*I*c^2*f^3)*(d*x + c) + (3*I*c^2*d
*e*f^2 + I*(d*x + c)^3*f^3 - I*c^3*f^3 + (3*I*d*e*f^2 - 3*I*c*f^3)*(d*x + c
)^2 + (3*I*d^2*e^2*f - 6*I*c*d*e*f^2 + 3*I*c^2*f^3)*(d*x + c))*cos(2*d*x +
2*c) - 2*(3*c^2*d*e*f^2 + (d*x + c)^3*f^3 - c^3*f^3 + 3*(d*e*f^2 - c*f^3)*(
d*x + c)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*(d*x + c))*cos(d*x + c)
- (3*c^2*d*e*f^2 + (d*x + c)^3*f^3 - c^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c
)^2 + 3*(d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*(d*x + c))*sin(2*d*x + 2*c) + (
-6*I*c^2*d*e*f^2 - 2*I*(d*x + c)^3*f^3 + 2*I*c^3*f^3 + (-6*I*d*e*f^2 + 6*I*
c*f^3)*(d*x + c)^2 + (-6*I*d^2*e^2*f + 12*I*c*d*e*f^2 - 6*I*c^2*f^3)*(d*x +
 c))*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*sin(d*x + c) + 1
) - (12*f^3*cos(2*d*x + 2*c) + 24*I*f^3*cos(d*x + c) + 12*I*f^3*sin(2*d*x +
 2*c) - 24*f^3*sin(d*x + c) - 12*f^3)*polylog(4, I*e^(I*d*x + I*c)) + (12*f
^3*cos(2*d*x + 2*c) + 24*I*f^3*cos(d*x + c) + 12*I*f^3*sin(2*d*x + 2*c) - 2
4*f^3*sin(d*x + c) - 12*f^3)*polylog(4, -I*e^(I*d*x + I*c)) - (12*I*d*e*f^2
 + 12*I*(d*x + c)*f^3 - 12*I*c*f^3 + (-12*I*d*e*f^2 - 12*I*(d*x + c)*f^3 +
12*I*c*f^3)*cos(2*d*x + 2*c) + 24*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(d*x
 + c) + 12*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(2*d*x + 2*c) + (24*I*d*e*f
^2 + 24*I*(d*x + c)*f^3 - 24*I*c*f^3)*sin(d*x + c))*polylog(3, I*e^(I*d*x +
 I*c)) - (-12*I*d*e*f^2 - 12*I*(d*x + c)*f^3 + 12*I*c*f^3 + (12*I*d*e*f^2 +
 12*I*(d*x + c)*f^3 - 12*I*c*f^3)*cos(2*d*x + 2*c) - 24*(d*e*f^2 + (d*x + c
)*f^3 - c*f^3)*cos(d*x + c) - 12*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(2*d*
x + 2*c) + (-24*I*d*e*f^2 - 24*I*(d*x + c)*f^3 + 24*I*c*f^3)*sin(d*x + c))*
polylog(3, -I*e^(I*d*x + I*c)) - (-12*I*(d*x + c)^2*f^3 + (-24*I*d*e*f^2 +
24*I*c*f^3)*(d*x + c))*sin(2*d*x + 2*c) - (-4*I*(d*x + c)^3*f^3 - 12*d^2*e^
2*f + (-12*I*c^2 + 24*c)*d*e*f^2 + (4*I*c^3 - 12*c^2)*f^3 + (-12*I*d*e*f^2
- 12*(-I*c - 1)*f^3)*(d*x + c)^2 + (-12*I*d^2*e^2*f - 24*(-I*c - 1)*d*e*f^2
 + (-12*I*c^2 - 24*c)*f^3)*(d*x + c))*sin(d*x + c))/(-4*I*a*d^3*cos(2*d*x +
 2*c) + 8*a*d^3*cos(d*x + c) + 4*a*d^3*sin(2*d*x + 2*c) + 8*I*a*d^3*sin(d*x
 + c) + 4*I*a*d^3))/d
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cos(c + d*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^3 \sec (c+dx)}{\sin (c+dx)+1}\,dx + \int \frac{f^3x^3 \sec (c+dx)}{\sin (c+dx)+1}\,dx + \int \frac{3ef^2x^2 \sec (c+dx)}{\sin (c+dx)+1}\,dx + \int \frac{3e^2fx \sec (c+dx)}{\sin (c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sec(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**3*sec(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f**3*x**3*sec
(c + d*x)/(sin(c + d*x) + 1), x) + Integral(3*e*f**2*x**2*sec(c + d*x)/(sin
(c + d*x) + 1), x) + Integral(3*e**2*f*x*sec(c + d*x)/(sin(c + d*x) + 1), x
))/a
```

3.270 $\int \frac{(e+fx)^2 \sec(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=278

$$-\frac{f^2\text{Li}_3\left(-ie^{i(c+dx)}\right)}{ad^3}+\frac{f^2\text{Li}_3\left(ie^{i(c+dx)}\right)}{ad^3}+\frac{f^2\tanh^{-1}(\sin(c+dx))}{ad^3}+\frac{f^2\log(\cos(c+dx))}{ad^3}+\frac{if(e+fx)\text{Li}_2\left(-ie^{i(c+dx)}\right)}{ad^2}-$$

```
[Out] -I*(f*x+e)^2*arctan(exp(I*(d*x+c)))/a/d+f^2*arctanh(sin(d*x+c))/a/d^3+f^2*l
n(cos(d*x+c))/a/d^3+I*f*(f*x+e)*polylog(2,-I*exp(I*(d*x+c)))/a/d^2-I*f*(f*x
+e)*polylog(2,I*exp(I*(d*x+c)))/a/d^2-f^2*polylog(3,-I*exp(I*(d*x+c)))/a/d^
3+f^2*polylog(3,I*exp(I*(d*x+c)))/a/d^3-f*(f*x+e)*sec(d*x+c)/a/d^2-1/2*(f*x
+e)^2*sec(d*x+c)^2/a/d+f*(f*x+e)*tan(d*x+c)/a/d^2+1/2*(f*x+e)^2*sec(d*x+c)*
tan(d*x+c)/a/d
```

Rubi [A] time = 0.27, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {4531, 4186, 3770, 4181, 2531, 2282, 6589, 4409, 4184, 3475}

$$\frac{if(e+fx)\text{PolyLog}\left(2,-ie^{i(c+dx)}\right)}{ad^2}-\frac{if(e+fx)\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^2}-\frac{f^2\text{PolyLog}\left(3,-ie^{i(c+dx)}\right)}{ad^3}+\frac{f^2\text{PolyLog}\left(3,i\right.}{ad^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sec[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-I)*(e + f*x)^2*ArcTan[E^(I*(c + d*x))])/(a*d) + (f^2*ArcTanh[Sin[c + d*x
]])/(a*d^3) + (f^2*Log[Cos[c + d*x]])/(a*d^3) + (I*f*(e + f*x)*PolyLog[2, (
-I)*E^(I*(c + d*x))])/(a*d^2) - (I*f*(e + f*x)*PolyLog[2, I*E^(I*(c + d*x))
])/(a*d^2) - (f^2*PolyLog[3, (-I)*E^(I*(c + d*x))])/(a*d^3) + (f^2*PolyLog[
3, I*E^(I*(c + d*x))])/(a*d^3) - (f*(e + f*x)*Sec[c + d*x])/(a*d^2) - ((e +
 f*x)^2*Sec[c + d*x]^2)/(2*a*d) + (f*(e + f*x)*Tan[c + d*x])/(a*d^2) + ((e
+ f*x)^2*Sec[c + d*x]*Tan[c + d*x])/(2*a*d)
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4531

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sec[c +
d*x]^(n + 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Sec[c + d*x]^(n + 1)*Tan[c
 + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && EqQ[a^2
 - b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\sec(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\sec^3(c+dx)\,dx}{a} - \frac{\int (e+fx)^2\sec^2(c+dx)\tan(c+dx)\,dx}{a}$$
$$= -\frac{f(e+fx)\sec(c+dx)}{ad^2} - \frac{(e+fx)^2\sec^2(c+dx)}{2ad} + \frac{(e+fx)^2\sec(c+dx)\tan(c+a}{2ad}$$
$$= -\frac{i(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{f^2\tanh^{-1}(\sin(c+dx))}{ad^3} - \frac{f(e+fx)\sec(c+dx)}{ad^2} - \frac{(}{}$$
$$= -\frac{i(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{f^2\tanh^{-1}(\sin(c+dx))}{ad^3} + \frac{f^2\log(\cos(c+dx))}{ad^3} + \frac{if(}{}$$
$$= -\frac{i(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{f^2\tanh^{-1}(\sin(c+dx))}{ad^3} + \frac{f^2\log(\cos(c+dx))}{ad^3} + \frac{if(}{}$$
$$= -\frac{i(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{f^2\tanh^{-1}(\sin(c+dx))}{ad^3} + \frac{f^2\log(\cos(c+dx))}{ad^3} + \frac{if(}{}$$

Mathematica [B] time = 8.21, size = 670, normalized size = 2.41

$$-\frac{\frac{6f\left(id(e+fx)\text{Li}_2\left(ie^{-i(c+dx)}\right)+f\text{Li}_3\left(ie^{-i(c+dx)}\right)\right)}{d^3}+\frac{3(e+fx)^2\log\left(1-ie^{-i(c+dx)}\right)}{d}+\frac{(e+fx)^3}{\left(e^{ic}-i\right)f}}{6a}-\frac{(\cos(c)+i\sin(c))\left(x(\cos(c)-i\sin(c))\left(d^2\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sec[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] -1/6*((e + f*x)^3/((-I + E^(I*c))*f) + (3*(e + f*x)^2*Log[1 - I/E^(I*(c + d
*x))])/d + (6*f*(I*d*(e + f*x)*PolyLog[2, I/E^(I*(c + d*x))] + f*PolyLog[3,
 I/E^(I*(c + d*x))]))/d^3)/a + (x*(3*e^2 + 3*e*f*x + f^2*x^2))/(6*a*(Cos[c/
2] - Sin[c/2])*(Cos[c/2] + Sin[c/2])) - ((Cos[c] + I*Sin[c])*(d^2*e*f*x^2*C
os[c] + (d^2*e^2 + 4*f^2)*x*(Cos[c] - I*Sin[c]) + (d^2*f^2*x^3*(Cos[c] - I*
Sin[c]))/3 - I*d^2*e*f*x^2*Sin[c] + (2*f^2*(d*x*PolyLog[2, (-I)*Cos[c + d*x
] - Sin[c + d*x]] - I*PolyLog[3, (-I)*Cos[c + d*x] - Sin[c + d*x]])*(Cos[c]
 - I*Sin[c])*(1 - I*Cos[c] + Sin[c]))/d + 2*e*f*PolyLog[2, (-I)*Cos[c + d*x
] - Sin[c + d*x]]*(Cos[c] - I*(1 + Sin[c])) - 2*d*e*f*x*Log[1 + I*Cos[c + d
*x] + Sin[c + d*x]]*(Cos[c] - I*Sin[c])*(Cos[c] + I*(1 + Sin[c])) - d*f^2*x
^2*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(Cos[c] - I*Sin[c])*(Cos[c] + I*(
1 + Sin[c])) + ((d^2*e^2 + 4*f^2)*(d*x + I*Log[Cos[c + d*x] + I*(1 + Sin[c
+ d*x])])*(I*Cos[c] + Sin[c])*(Cos[c] + I*(1 + Sin[c])))/d))/(2*a*d^2*(Cos[
c] + I*(1 + Sin[c]))) - (e + f*x)^2/(2*a*d*(Cos[c/2 + (d*x)/2] + Sin[c/2 +
(d*x)/2])^2) + (2*(e*f*Sin[(d*x)/2] + f^2*x*Sin[(d*x)/2]))/(a*d^2*(Cos[c/2]
 + Sin[c/2])*(Cos[c/2 + (d*x)/2] + Sin[c/2 + (d*x)/2]))
```

fricas [C] time = 0.58, size = 1064, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(2*d^2*f^2*x^2 + 4*d^2*e*f*x + 2*d^2*e^2 + 4*(d*f^2*x + d*e*f)*cos(d*x
 + c) - (-2*I*d*f^2*x - 2*I*d*e*f + (-2*I*d*f^2*x - 2*I*d*e*f)*sin(d*x + c)
)*dilog(I*cos(d*x + c) + sin(d*x + c)) - (-2*I*d*f^2*x - 2*I*d*e*f + (-2*I*
d*f^2*x - 2*I*d*e*f)*sin(d*x + c))*dilog(I*cos(d*x + c) - sin(d*x + c)) - (
2*I*d*f^2*x + 2*I*d*e*f + (2*I*d*f^2*x + 2*I*d*e*f)*sin(d*x + c))*dilog(-I*
cos(d*x + c) + sin(d*x + c)) - (2*I*d*f^2*x + 2*I*d*e*f + (2*I*d*f^2*x + 2*
I*d*e*f)*sin(d*x + c))*dilog(-I*cos(d*x + c) - sin(d*x + c)) - (d^2*e^2 - 2
*c*d*e*f + (c^2 + 4)*f^2 + (d^2*e^2 - 2*c*d*e*f + (c^2 + 4)*f^2)*sin(d*x +
c))*log(cos(d*x + c) + I*sin(d*x + c) + I) + (d^2*e^2 - 2*c*d*e*f + c^2*f^2
 + (d^2*e^2 - 2*c*d*e*f + c^2*f^2)*sin(d*x + c))*log(cos(d*x + c) - I*sin(d
*x + c) + I) - (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2 + (d^2*f^2*
x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*sin(d*x + c))*log(I*cos(d*x + c) +
 sin(d*x + c) + 1) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2 + (d^
2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*sin(d*x + c))*log(I*cos(d*x
+ c) - sin(d*x + c) + 1) - (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2
 + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*sin(d*x + c))*log(-I*c
os(d*x + c) + sin(d*x + c) + 1) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f -
c^2*f^2 + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*sin(d*x + c))*l
og(-I*cos(d*x + c) - sin(d*x + c) + 1) - (d^2*e^2 - 2*c*d*e*f + (c^2 + 4)*f
^2 + (d^2*e^2 - 2*c*d*e*f + (c^2 + 4)*f^2)*sin(d*x + c))*log(-cos(d*x + c)
+ I*sin(d*x + c) + I) + (d^2*e^2 - 2*c*d*e*f + c^2*f^2 + (d^2*e^2 - 2*c*d*e
```

```
*f + c^2*f^2)*sin(d*x + c))*log(-cos(d*x + c) - I*sin(d*x + c) + I) + 2*(f^
2*sin(d*x + c) + f^2)*polylog(3, I*cos(d*x + c) + sin(d*x + c)) - 2*(f^2*si
n(d*x + c) + f^2)*polylog(3, I*cos(d*x + c) - sin(d*x + c)) + 2*(f^2*sin(d*
x + c) + f^2)*polylog(3, -I*cos(d*x + c) + sin(d*x + c)) - 2*(f^2*sin(d*x +
 c) + f^2)*polylog(3, -I*cos(d*x + c) - sin(d*x + c)))/(a*d^3*sin(d*x + c)
+ a*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \sec(dx+c)}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sec(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.31, size = 677, normalized size = 2.44

$$-\frac{i\left(d f^2x^2\mathrm{e}^{i(dx+c)}+2defx\,\mathrm{e}^{i(dx+c)}+d\,e^2\mathrm{e}^{i(dx+c)}+2f^2x-2if^2x\,\mathrm{e}^{i(dx+c)}+2ef-2ief\,\mathrm{e}^{i(dx+c)}\right)}{d^2\left(\mathrm{e}^{i(dx+c)}+i\right)^2 a}+\frac{2f^2\ln\left(\mathrm{e}^{i(dx+c)}+i\right.}{d^3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sec(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] -I*(d*f^2*x^2*exp(I*(d*x+c))+2*d*e*f*x*exp(I*(d*x+c))+d*e^2*exp(I*(d*x+c))+
2*f^2*x-2*I*f^2*x*exp(I*(d*x+c))+2*e*f-2*I*e*f*exp(I*(d*x+c)))/d^2/(exp(I*(
d*x+c))+I)^2/a+2/d^3/a*f^2*ln(exp(I*(d*x+c))+I)-2/d^3/a*f^2*ln(exp(I*(d*x+c
)))-1/2/d/a*e^2*ln(exp(I*(d*x+c))-I)+1/d/a*f*e*ln(1-I*exp(I*(d*x+c)))*x+1/d
^2/a*f*e*ln(1-I*exp(I*(d*x+c)))*c-1/d^2/a*f*e*c*ln(exp(I*(d*x+c))+I)+1/2/d/
a*f^2*ln(1-I*exp(I*(d*x+c)))*x^2-1/2/d^3/a*f^2*ln(1-I*exp(I*(d*x+c)))*c^2+1
/2/d/a*ln(exp(I*(d*x+c))+I)*e^2+1/2/d^3/a*ln(1+I*exp(I*(d*x+c)))*c^2*f^2-1/
2/d^3/a*f^2*c^2*ln(exp(I*(d*x+c))-I)-1/2/d/a*ln(1+I*exp(I*(d*x+c)))*f^2*x^2
-I/d^2/a*e*f*polylog(2,I*exp(I*(d*x+c)))-I/d^2/a*polylog(2,I*exp(I*(d*x+c))
)*f^2*x-1/d/a*ln(1+I*exp(I*(d*x+c)))*e*f*x-1/d^2/a*ln(1+I*exp(I*(d*x+c)))*c
*e*f+1/d^2/a*e*f*c*ln(exp(I*(d*x+c))-I)+I/d^2/a*polylog(2,-I*exp(I*(d*x+c))
)*f^2*x+I/d^2/a*e*f*polylog(2,-I*exp(I*(d*x+c)))+1/2/d^3/a*f^2*c^2*ln(exp(I
*(d*x+c))+I)-f^2*polylog(3,-I*exp(I*(d*x+c)))/a/d^3+f^2*polylog(3,I*exp(I*(
d*x+c)))/a/d^3
```

maxima [B] time = 0.84, size = 1923, normalized size = 6.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/4*(2*c*e*f*(2/(a*d*sin(d*x + c) + a*d) - log(sin(d*x + c) + 1)/(a*d) + lo
g(sin(d*x + c) - 1)/(a*d)) + e^2*(log(sin(d*x + c) + 1)/a - log(sin(d*x + c
) - 1)/a - 2/(a*sin(d*x + c) + a)) - 4*(8*(d*x + c)*f^2*cos(2*d*x + 2*c) +
8*I*(d*x + c)*f^2*sin(2*d*x + 2*c) + 8*d*e*f - 8*c*f^2 - (2*(c^2 + 4)*f^2*c
os(2*d*x + 2*c) + (4*I*c^2 + 16*I)*f^2*cos(d*x + c) + (2*I*c^2 + 8*I)*f^2*s
in(2*d*x + 2*c) - 4*(c^2 + 4)*f^2*sin(d*x + c) - 2*(c^2 + 4)*f^2)*arctan2(s
in(d*x + c) + 1, cos(d*x + c)) + (2*c^2*f^2*cos(2*d*x + 2*c) + 4*I*c^2*f^2*
cos(d*x + c) + 2*I*c^2*f^2*sin(2*d*x + 2*c) - 4*c^2*f^2*sin(d*x + c) - 2*c^
2*f^2)*arctan2(sin(d*x + c) - 1, cos(d*x + c)) - (2*(d*x + c)^2*f^2 + 4*(d*
e*f - c*f^2)*(d*x + c) - 2*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*
cos(2*d*x + 2*c) + (-4*I*(d*x + c)^2*f^2 + (-8*I*d*e*f + 8*I*c*f^2)*(d*x +
c))*cos(d*x + c) + (-2*I*(d*x + c)^2*f^2 + (-4*I*d*e*f + 4*I*c*f^2)*(d*x +
c))*sin(2*d*x + 2*c) + 4*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*si
n(d*x + c))*arctan2(cos(d*x + c), sin(d*x + c) + 1) - (2*(d*x + c)^2*f^2 +
4*(d*e*f - c*f^2)*(d*x + c) - 2*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x +
 c))*cos(2*d*x + 2*c) + (-4*I*(d*x + c)^2*f^2 + (-8*I*d*e*f + 8*I*c*f^2)*(d
*x + c))*cos(d*x + c) + (-2*I*(d*x + c)^2*f^2 + (-4*I*d*e*f + 4*I*c*f^2)*(d
*x + c))*sin(2*d*x + 2*c) + 4*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c
))*sin(d*x + c))*arctan2(cos(d*x + c), -sin(d*x + c) + 1) + (4*(d*x + c)^2*
f^2 - 8*I*d*e*f + 4*(c^2 + 2*I*c)*f^2 + (8*d*e*f - (8*c - 8*I)*f^2)*(d*x +
c))*cos(d*x + c) - (4*d*e*f + 4*(d*x + c)*f^2 - 4*c*f^2 - 4*(d*e*f + (d*x +
 c)*f^2 - c*f^2)*cos(2*d*x + 2*c) + (-8*I*d*e*f - 8*I*(d*x + c)*f^2 + 8*I*c
*f^2)*cos(d*x + c) + (-4*I*d*e*f - 4*I*(d*x + c)*f^2 + 4*I*c*f^2)*sin(2*d*x
 + 2*c) + 8*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(d*x + c))*dilog(I*e^(I*d*x
+ I*c)) + (4*d*e*f + 4*(d*x + c)*f^2 - 4*c*f^2 - 4*(d*e*f + (d*x + c)*f^2 -
 c*f^2)*cos(2*d*x + 2*c) - (8*I*d*e*f + 8*I*(d*x + c)*f^2 - 8*I*c*f^2)*cos(
d*x + c) - (4*I*d*e*f + 4*I*(d*x + c)*f^2 - 4*I*c*f^2)*sin(2*d*x + 2*c) + 8
*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(d*x + c))*dilog(-I*e^(I*d*x + I*c)) -
(I*(d*x + c)^2*f^2 + (I*c^2 + 4*I)*f^2 + (2*I*d*e*f - 2*I*c*f^2)*(d*x + c)
+ (-I*(d*x + c)^2*f^2 + (-I*c^2 - 4*I)*f^2 + (-2*I*d*e*f + 2*I*c*f^2)*(d*x
+ c))*cos(2*d*x + 2*c) + 2*((d*x + c)^2*f^2 + (c^2 + 4)*f^2 + 2*(d*e*f - c*
f^2)*(d*x + c))*cos(d*x + c) + ((d*x + c)^2*f^2 + (c^2 + 4)*f^2 + 2*(d*e*f
- c*f^2)*(d*x + c))*sin(2*d*x + 2*c) + (2*I*(d*x + c)^2*f^2 + (2*I*c^2 + 8*
I)*f^2 + (4*I*d*e*f - 4*I*c*f^2)*(d*x + c))*sin(d*x + c))*log(cos(d*x + c)^
2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) - (-I*(d*x + c)^2*f^2 - I*c^2*f^2
+ (-2*I*d*e*f + 2*I*c*f^2)*(d*x + c) + (I*(d*x + c)^2*f^2 + I*c^2*f^2 + (2*
I*d*e*f - 2*I*c*f^2)*(d*x + c))*cos(2*d*x + 2*c) - 2*((d*x + c)^2*f^2 + c^2
*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*cos(d*x + c) - ((d*x + c)^2*f^2 + c^2*f
^2 + 2*(d*e*f - c*f^2)*(d*x + c))*sin(2*d*x + 2*c) + (-2*I*(d*x + c)^2*f^2
- 2*I*c^2*f^2 + (-4*I*d*e*f + 4*I*c*f^2)*(d*x + c))*sin(d*x + c))*log(cos(d
*x + c)^2 + sin(d*x + c)^2 - 2*sin(d*x + c) + 1) - (-4*I*f^2*cos(2*d*x + 2*
```

```
c) + 8*f^2*cos(d*x + c) + 4*f^2*sin(2*d*x + 2*c) + 8*I*f^2*sin(d*x + c) + 4
*I*f^2)*polylog(3, I*e^(I*d*x + I*c)) - (4*I*f^2*cos(2*d*x + 2*c) - 8*f^2*c
os(d*x + c) - 4*f^2*sin(2*d*x + 2*c) - 8*I*f^2*sin(d*x + c) - 4*I*f^2)*poly
log(3, -I*e^(I*d*x + I*c)) - (-4*I*(d*x + c)^2*f^2 - 8*d*e*f + (-4*I*c^2 +
8*c)*f^2 + (-8*I*d*e*f - 8*(-I*c - 1)*f^2)*(d*x + c))*sin(d*x + c))/(-4*I*a
*d^2*cos(2*d*x + 2*c) + 8*a*d^2*cos(d*x + c) + 4*a*d^2*sin(2*d*x + 2*c) + 8
*I*a*d^2*sin(d*x + c) + 4*I*a*d^2))/d
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cos(c + d*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^2 \sec(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{f^2x^2 \sec(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{2efx \sec(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sec(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**2*sec(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f**2*x**2*sec
(c + d*x)/(sin(c + d*x) + 1), x) + Integral(2*e*f*x*sec(c + d*x)/(sin(c + d
*x) + 1), x))/a
```

3.271 $\int \frac{(e+fx)\sec(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=172

$$\frac{if\mathrm{Li}_2\left(-ie^{i(c+dx)}\right)}{2ad^2}-\frac{if\mathrm{Li}_2\left(ie^{i(c+dx)}\right)}{2ad^2}+\frac{f\tan(c+dx)}{2ad^2}-\frac{f\sec(c+dx)}{2ad^2}-\frac{i(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad}-\frac{(e+fx)\sec^2(c+dx)}{2ad}$$

```
[Out] -I*(f*x+e)*arctan(exp(I*(d*x+c)))/a/d+1/2*I*f*polylog(2,-I*exp(I*(d*x+c)))/
a/d^2-1/2*I*f*polylog(2,I*exp(I*(d*x+c)))/a/d^2-1/2*f*sec(d*x+c)/a/d^2-1/2*
(f*x+e)*sec(d*x+c)^2/a/d+1/2*f*tan(d*x+c)/a/d^2+1/2*(f*x+e)*sec(d*x+c)*tan(
d*x+c)/a/d
```

Rubi [A] time = 0.14, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4531, 4185, 4181, 2279, 2391, 4409, 3767, 8}

$$\frac{if\,\mathrm{PolyLog}\left(2,-ie^{i(c+dx)}\right)}{2ad^2}-\frac{if\,\mathrm{PolyLog}\left(2,ie^{i(c+dx)}\right)}{2ad^2}+\frac{f\tan(c+dx)}{2ad^2}-\frac{f\sec(c+dx)}{2ad^2}-\frac{i(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad}-\frac{(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sec[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-I)*(e + f*x)*ArcTan[E^(I*(c + d*x))])/(a*d) + ((I/2)*f*PolyLog[2, (-I)*E
^(I*(c + d*x))])/(a*d^2) - ((I/2)*f*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^2)
- (f*Sec[c + d*x])/(2*a*d^2) - ((e + f*x)*Sec[c + d*x]^2)/(2*a*d) + (f*Tan[
c + d*x])/(2*a*d^2) + ((e + f*x)*Sec[c + d*x]*Tan[c + d*x])/(2*a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4531

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sec[c +
d*x]^(n + 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Sec[c + d*x]^(n + 1)*Tan[c
 + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && EqQ[a^2
 - b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)\sec(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)\sec^3(c+dx)\,dx}{a} - \frac{\int (e+fx)\sec^2(c+dx)\tan(c+dx)\,dx}{a}$$
$$= -\frac{f\sec(c+dx)}{2ad^2} - \frac{(e+fx)\sec^2(c+dx)}{2ad} + \frac{(e+fx)\sec(c+dx)\tan(c+dx)}{2ad} + \frac{\int (e+ \ldots}{}$$
$$= -\frac{i(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{f\sec(c+dx)}{2ad^2} - \frac{(e+fx)\sec^2(c+dx)}{2ad} + \frac{(e+fx)\sec(c \ldots}{2 \ldots}$$
$$= -\frac{i(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{f\sec(c+dx)}{2ad^2} - \frac{(e+fx)\sec^2(c+dx)}{2ad} + \frac{f\tan(c+dx)}{2ad^2} \ldots$$
$$= -\frac{i(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{if\operatorname{Li}_2\left(-ie^{i(c+dx)}\right)}{2ad^2} - \frac{if\operatorname{Li}_2\left(ie^{i(c+dx)}\right)}{2ad^2} - \frac{f\sec(c+dx)}{2ad^2} - \ldots$$

Mathematica [B] time = 3.07, size = 655, normalized size = 3.81

$$-\frac{(c+dx)(cf-d(2e+fx))\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)^2+de\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)^2\left(2\log \ldots\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sec[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] -1/4*(2*d*(e + f*x) - 4*f*Sin[(c + d*x)/2]*(Cos[(c + d*x)/2] + Sin[(c + d*x
)/2]) + (c + d*x)*(c*f - d*(2*e + f*x))*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2
])^2 + d*e*(c + d*x + 2*Log[Cos[(c + d*x)/2] - Sin[(c + d*x)/2]])*(Cos[(c +
 d*x)/2] + Sin[(c + d*x)/2])^2 - c*f*(c + d*x + 2*Log[Cos[(c + d*x)/2] - Si
n[(c + d*x)/2]])*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^2 + d*e*(c + d*x - 2
*Log[Cos[(c + d*x)/2] + Sin[(c + d*x)/2]])*(Cos[(c + d*x)/2] + Sin[(c + d*x
)/2])^2 - c*f*(c + d*x - 2*Log[Cos[(c + d*x)/2] + Sin[(c + d*x)/2]])*(Cos[(
c + d*x)/2] + Sin[(c + d*x)/2])^2 - (f*((-1)^(3/4)*(c + d*x)^2 + ((-3*I)*Pi
*(c + d*x) - 4*Pi*Log[1 + E^((-I)*(c + d*x))] + 2*(-2*c + Pi - 2*d*x)*Log[1
 + I*E^(I*(c + d*x))] + 4*Pi*Log[Cos[(c + d*x)/2]] - 2*Pi*Log[Sin[(2*c - Pi
 + 2*d*x)/4]] + (4*I)*PolyLog[2, (-I)*E^(I*(c + d*x))])/Sqrt[2])*(Cos[(c +
d*x)/2] + Sin[(c + d*x)/2])^2)/Sqrt[2] + (f*((-1)^(1/4)*(c + d*x)^2 + ((-I)
*Pi*(c + d*x) - 4*Pi*Log[1 + E^((-I)*(c + d*x))] - 2*(2*c + Pi + 2*d*x)*Log
[1 - I*E^(I*(c + d*x))] + 4*Pi*Log[Cos[(c + d*x)/2]] + 2*Pi*Log[Sin[(2*c +
Pi + 2*d*x)/4]] + (4*I)*PolyLog[2, I*E^(I*(c + d*x))])/Sqrt[2])*(Cos[(c + d
*x)/2] + Sin[(c + d*x)/2])^2)/Sqrt[2])/(a*d^2*(1 + Sin[c + d*x]))
```

fricas [B] time = 0.54, size = 508, normalized size = 2.95

$$-\frac{2\,dfx+2\,de+2\,f\cos\left(dx+c\right)-\left(-i\,f\sin\left(dx+c\right)-i\,f\right)\mathrm{Li}_2\left(i\,\cos\left(dx+c\right)+\sin\left(dx+c\right)\right)-\left(-i\,f\sin\left(dx+c\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(2*d*f*x + 2*d*e + 2*f*cos(d*x + c) - (-I*f*sin(d*x + c) - I*f)*dilog(
I*cos(d*x + c) + sin(d*x + c)) - (-I*f*sin(d*x + c) - I*f)*dilog(I*cos(d*x
+ c) - sin(d*x + c)) - (I*f*sin(d*x + c) + I*f)*dilog(-I*cos(d*x + c) + sin
(d*x + c)) - (I*f*sin(d*x + c) + I*f)*dilog(-I*cos(d*x + c) - sin(d*x + c))
 - (d*e - c*f + (d*e - c*f)*sin(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c)
 + I) + (d*e - c*f + (d*e - c*f)*sin(d*x + c))*log(cos(d*x + c) - I*sin(d*x
 + c) + I) - (d*f*x + c*f + (d*f*x + c*f)*sin(d*x + c))*log(I*cos(d*x + c)
+ sin(d*x + c) + 1) + (d*f*x + c*f + (d*f*x + c*f)*sin(d*x + c))*log(I*cos(
d*x + c) - sin(d*x + c) + 1) - (d*f*x + c*f + (d*f*x + c*f)*sin(d*x + c))*l
og(-I*cos(d*x + c) + sin(d*x + c) + 1) + (d*f*x + c*f + (d*f*x + c*f)*sin(d
*x + c))*log(-I*cos(d*x + c) - sin(d*x + c) + 1) - (d*e - c*f + (d*e - c*f)
*sin(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c) + I) + (d*e - c*f + (d*e
- c*f)*sin(d*x + c))*log(-cos(d*x + c) - I*sin(d*x + c) + I))/(a*d^2*sin(d*
x + c) + a*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\sec\left(dx+c\right)}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sec(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.34, size = 303, normalized size = 1.76

$$-\frac{i\left(dfx\,\mathrm{e}^{i(dx+c)}+de\,\mathrm{e}^{i(dx+c)}+f-if\,\mathrm{e}^{i(dx+c)}\right)}{d^2\left(\mathrm{e}^{i(dx+c)}+i\right)^2a}-\frac{e\ln\left(\mathrm{e}^{i(dx+c)}-i\right)}{2ad}+\frac{\ln\left(\mathrm{e}^{i(dx+c)}+i\right)e}{2da}-\frac{f\ln\left(1+i\mathrm{e}^{i(dx+c)}\right)x}{2ad}-\frac{f\ln\left(1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sec(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] -I*(d*f*x*exp(I*(d*x+c))+d*e*exp(I*(d*x+c))+f-I*f*exp(I*(d*x+c)))/d^2/(exp(
I*(d*x+c))+I)^2/a-1/2/a/d*e*ln(exp(I*(d*x+c))-I)+1/2/d/a*ln(exp(I*(d*x+c))+
```

```
I)*e-1/2/a/d*f*ln(1+I*exp(I*(d*x+c)))*x-1/2/a/d^2*f*ln(1+I*exp(I*(d*x+c)))*
c+1/2*I*f*polylog(2,-I*exp(I*(d*x+c)))/a/d^2+1/2/d/a*f*ln(1-I*exp(I*(d*x+c)
))*x+1/2/d^2/a*f*ln(1-I*exp(I*(d*x+c)))*c-1/2*I*f*polylog(2,I*exp(I*(d*x+c)
))/a/d^2+1/2/a/d^2*f*c*ln(exp(I*(d*x+c))-I)-1/2/d^2/a*f*c*ln(exp(I*(d*x+c))
+I)
```

maxima [B] time = 1.39, size = 730, normalized size = 4.24

$$\frac{(2\,de\cos\left(2\,dx+2\,c\right)+4i\,de\cos\left(dx+c\right)+2i\,de\sin\left(2\,dx+2\,c\right)-4\,de\sin\left(dx+c\right)-2\,de)\arctan\left(\sin\left(dx+c\right)+1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] ((2*d*e*cos(2*d*x + 2*c) + 4*I*d*e*cos(d*x + c) + 2*I*d*e*sin(2*d*x + 2*c)
- 4*d*e*sin(d*x + c) - 2*d*e)*arctan2(sin(d*x + c) + 1, cos(d*x + c)) - (2*
d*e*cos(2*d*x + 2*c) + 4*I*d*e*cos(d*x + c) + 2*I*d*e*sin(2*d*x + 2*c) - 4*
d*e*sin(d*x + c) - 2*d*e)*arctan2(sin(d*x + c) - 1, cos(d*x + c)) - (2*d*f*
x*cos(2*d*x + 2*c) + 4*I*d*f*x*cos(d*x + c) + 2*I*d*f*x*sin(2*d*x + 2*c) -
4*d*f*x*sin(d*x + c) - 2*d*f*x)*arctan2(cos(d*x + c), sin(d*x + c) + 1) - (
2*d*f*x*cos(2*d*x + 2*c) + 4*I*d*f*x*cos(d*x + c) + 2*I*d*f*x*sin(2*d*x + 2
*c) - 4*d*f*x*sin(d*x + c) - 2*d*f*x)*arctan2(cos(d*x + c), -sin(d*x + c) +
 1) - (4*d*f*x + 4*d*e - 4*I*f)*cos(d*x + c) - (2*f*cos(2*d*x + 2*c) + 4*I*
f*cos(d*x + c) + 2*I*f*sin(2*d*x + 2*c) - 4*f*sin(d*x + c) - 2*f)*dilog(I*e
^(I*d*x + I*c)) + (2*f*cos(2*d*x + 2*c) + 4*I*f*cos(d*x + c) + 2*I*f*sin(2*
d*x + 2*c) - 4*f*sin(d*x + c) - 2*f)*dilog(-I*e^(I*d*x + I*c)) + (I*d*f*x +
 I*d*e + (-I*d*f*x - I*d*e)*cos(2*d*x + 2*c) + 2*(d*f*x + d*e)*cos(d*x + c)
 + (d*f*x + d*e)*sin(2*d*x + 2*c) + (2*I*d*f*x + 2*I*d*e)*sin(d*x + c))*log
(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) + (-I*d*f*x - I*d*e
+ (I*d*f*x + I*d*e)*cos(2*d*x + 2*c) - 2*(d*f*x + d*e)*cos(d*x + c) - (d*f*
x + d*e)*sin(2*d*x + 2*c) + (-2*I*d*f*x - 2*I*d*e)*sin(d*x + c))*log(cos(d*
x + c)^2 + sin(d*x + c)^2 - 2*sin(d*x + c) + 1) + (-4*I*d*f*x - 4*I*d*e - 4
*f)*sin(d*x + c) - 4*f)/(-4*I*a*d^2*cos(2*d*x + 2*c) + 8*a*d^2*cos(d*x + c)
 + 4*a*d^2*sin(2*d*x + 2*c) + 8*I*a*d^2*sin(d*x + c) + 4*I*a*d^2)
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.01

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cos(c + d*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e\sec(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{fx\sec(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e*sec(c + d*x)/(sin(c + d*x) + 1), x) + Integral(f*x*sec(c + d*x)
/(sin(c + d*x) + 1), x))/a
```

3.272 $\int \frac{\sec(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=37

$$\frac{\tanh^{-1}(\sin(c+dx))}{2ad}-\frac{1}{2d(a\sin(c+dx)+a)}$$

```
[Out] 1/2*arctanh(sin(d*x+c))/a/d-1/2/d/(a+a*sin(d*x+c))
```

Rubi [A] time = 0.05, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {2667, 44, 206}

$$\frac{\tanh^{-1}(\sin(c+dx))}{2ad}-\frac{1}{2d(a\sin(c+dx)+a)}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[c + d*x]/(a + a*Sin[c + d*x]),x]
```

```
[Out] ArcTanh[Sin[c + d*x]]/(2*a*d) - 1/(2*d*(a + a*Sin[c + d*x]))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2667

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^(m + (p - 1)/2)*(a - x)
^((p - 1)/2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && In
tegerQ[(p - 1)/2] && EqQ[a^2 - b^2, 0] && (GeQ[p, -1] ||  !IntegerQ[m + 1/2
])
```

Rubi steps

$$\int \frac{\sec(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{a\,\text{Subst}\left(\int \frac{1}{(a-x)(a+x)^2}\,dx, x, a\sin(c+dx)\right)}{d}$$
$$= \frac{a\,\text{Subst}\left(\int \left(\frac{1}{2a(a+x)^2} + \frac{1}{2a\left(a^2-x^2\right)}\right) dx, x, a\sin(c+dx)\right)}{d}$$
$$= -\frac{1}{2d(a+a\sin(c+dx))} + \frac{\text{Subst}\left(\int \frac{1}{a^2-x^2}\,dx, x, a\sin(c+dx)\right)}{2d}$$
$$= \frac{\tanh^{-1}(\sin(c+dx))}{2ad} - \frac{1}{2d(a+a\sin(c+dx))}$$

Mathematica [A] time = 0.04, size = 30, normalized size = 0.81

$$\frac{\tanh^{-1}(\sin(c+dx)) - \frac{1}{\sin(c+dx)+1}}{2ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[c + d*x]/(a + a*Sin[c + d*x]),x]
```

```
[Out] (ArcTanh[Sin[c + d*x]] - (1 + Sin[c + d*x])^(-1))/(2*a*d)
```

fricas [A] time = 0.48, size = 58, normalized size = 1.57

$$\frac{(\sin(dx+c)+1)\log(\sin(dx+c)+1) - (\sin(dx+c)+1)\log(-\sin(dx+c)+1) - 2}{4\,(ad\sin(dx+c)+ad)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*((sin(d*x + c) + 1)*log(sin(d*x + c) + 1) - (sin(d*x + c) + 1)*log(-sin
(d*x + c) + 1) - 2)/(a*d*sin(d*x + c) + a*d)
```

giac [A] time = 3.94, size = 58, normalized size = 1.57

$$\frac{\frac{\log(|\sin(dx+c)+1|)}{a} - \frac{\log(|\sin(dx+c)-1|)}{a} - \frac{\sin(dx+c)+3}{a(\sin(dx+c)+1)}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/4*(log(abs(sin(d*x + c) + 1))/a - log(abs(sin(d*x + c) - 1))/a - (sin(d*x
 + c) + 3)/(a*(sin(d*x + c) + 1)))/d
```

maple [A] time = 0.11, size = 54, normalized size = 1.46

$$-\frac{\ln\left(\sin\left(dx+c\right)-1\right)}{4ad}-\frac{1}{2ad\left(1+\sin\left(dx+c\right)\right)}+\frac{\ln\left(1+\sin\left(dx+c\right)\right)}{4ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/4/a/d*ln(sin(d*x+c)-1)-1/2/a/d/(1+sin(d*x+c))+1/4*ln(1+sin(d*x+c))/a/d
```

maxima [A] time = 0.49, size = 47, normalized size = 1.27

$$\frac{\frac{\log(\sin(dx+c)+1)}{a}-\frac{\log(\sin(dx+c)-1)}{a}-\frac{2}{a\sin(dx+c)+a}}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/4*(log(sin(d*x + c) + 1)/a - log(sin(d*x + c) - 1)/a - 2/(a*sin(d*x + c)
+ a))/d
```

mupad [B] time = 0.08, size = 33, normalized size = 0.89

$$\frac{\mathrm{atanh}\left(\sin\left(c+d\,x\right)\right)}{2\,a\,d}-\frac{1}{2\,d\,\left(a+a\,\sin\left(c+d\,x\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(c + d*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] atanh(sin(c + d*x))/(2*a*d) - 1/(2*d*(a + a*sin(c + d*x)))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sec\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sec(c + d*x)/(sin(c + d*x) + 1), x)/a
```

3.273 $\int \frac{\sec(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\sec(c+dx)}{(e+fx)(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sec(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sec(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sec[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Sec[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sec(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx = \int \frac{\sec(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 14.29, size = 0, normalized size = 0.00

$$\int \frac{\sec(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sec[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Sec[c + d*x]/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sec(dx+c)}{afx+ae+\left(afx+ae\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")

[Out] integral(sec(d*x + c)/(a*f*x + a*e + (a*f*x + a*e)*sin(d*x + c)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sec(dx+c)}{(fx+e)(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")

[Out] integrate(sec(d*x + c)/((f*x + e)*(a*sin(d*x + c) + a)), x)

maple [A] time = 2.26, size = 0, normalized size = 0.00

$$\int \frac{\sec(dx+c)}{(fx+e)(a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(sec(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)

[Out] int(sec(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")

[Out] -(2*(d*f*x + d*e)*cos(d*x + c)^2 + 2*(d*f*x + d*e)*sin(d*x + c)^2 - (f*cos(d*x + c) + (d*f*x + d*e)*sin(d*x + c))*cos(2*d*x + 2*c) - f*cos(d*x + c) - (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2 + (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*cos(2*d*x + 2*c)^2 + 4*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*cos(d*x + c)^2 + 4*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*cos(d*x + c)*sin(2*d*x + 2*c) + (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*sin(2*d*x + 2*c)^2 + 4*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*sin(d*x + c)^2 - 2*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2 + 2*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*sin(d*x + c))*cos(2*d*x + 2*c) + 4*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*sin(d*x + c))*integrate(1/2*(d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2 + 4*f^2)*cos(d*x + c)/(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3 + (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*cos(d*x + c)^2 + (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 +

```
3*a*d^2*e^2*f*x + a*d^2*e^3)*sin(d*x + c)^2 + 2*(a*d^2*f^3*x^3 + 3*a*d^2*e*
f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*sin(d*x + c)), x) - (a*d^2*f^2*x^2 +
 2*a*d^2*e*f*x + a*d^2*e^2 + (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*co
s(2*d*x + 2*c)^2 + 4*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*cos(d*x +
c)^2 + 4*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*cos(d*x + c)*sin(2*d*x
 + 2*c) + (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*sin(2*d*x + 2*c)^2 +
4*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*sin(d*x + c)^2 - 2*(a*d^2*f^2
*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2 + 2*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2
*e^2)*sin(d*x + c))*cos(2*d*x + 2*c) + 4*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a
*d^2*e^2)*sin(d*x + c))*integrate(1/2*cos(d*x + c)/(a*f*x + (a*f*x + a*e)*c
os(d*x + c)^2 + (a*f*x + a*e)*sin(d*x + c)^2 + a*e - 2*(a*f*x + a*e)*sin(d*
x + c)), x) + ((d*f*x + d*e)*cos(d*x + c) - f*sin(d*x + c) - f)*sin(2*d*x +
 2*c) + (d*f*x + d*e)*sin(d*x + c))/(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*
e^2 + (a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*cos(2*d*x + 2*c)^2 + 4*(a
*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*cos(d*x + c)^2 + 4*(a*d^2*f^2*x^2
 + 2*a*d^2*e*f*x + a*d^2*e^2)*cos(d*x + c)*sin(2*d*x + 2*c) + (a*d^2*f^2*x^
2 + 2*a*d^2*e*f*x + a*d^2*e^2)*sin(2*d*x + 2*c)^2 + 4*(a*d^2*f^2*x^2 + 2*a*
d^2*e*f*x + a*d^2*e^2)*sin(d*x + c)^2 - 2*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x +
a*d^2*e^2 + 2*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*sin(d*x + c))*cos
(2*d*x + 2*c) + 4*(a*d^2*f^2*x^2 + 2*a*d^2*e*f*x + a*d^2*e^2)*sin(d*x + c))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cos(c+d\,x)\,\left(e+f\,x\right)\,\left(a+a\,\sin(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(c + d*x)*(e + f*x)*(a + a*sin(c + d*x))),x)
[Out] int(1/(cos(c + d*x)*(e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sec(c+dx)}{e\sin(c+dx)+e+fx\sin(c+dx)+fx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(f*x+e)/(a+a*sin(d*x+c)),x)
[Out] Integral(sec(c + d*x)/(e*sin(c + d*x) + e + f*x*sin(c + d*x) + f*x), x)/a
```

3.274 $\int \frac{\sec(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\sec(c+dx)}{(e+fx)^2(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sec(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sec(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sec[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Sec[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sec(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx=\int \frac{\sec(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 23.27, size = 0, normalized size = 0.00

$$\int \frac{\sec(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sec[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Sec[c + d*x]/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sec(dx+c)}{af^2x^2+2\,aefx+ae^2+\left(af^2x^2+2\,aefx+ae^2\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(sec(d*x + c)/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2 + 2*a*e*f
*x + a*e^2)*sin(d*x + c)), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sec(dx+c)}{(fx+e)^2(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(sec(d*x + c)/((f*x + e)^2*(a*sin(d*x + c) + a)), x)
```

maple [A] time = 4.02, size = 0, normalized size = 0.00

$$\int \frac{\sec(dx+c)}{(fx+e)^2\,(a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int(sec(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(2*(d*f*x + d*e)*cos(d*x + c)^2 + 2*(d*f*x + d*e)*sin(d*x + c)^2 - (2*f*co
s(d*x + c) + (d*f*x + d*e)*sin(d*x + c))*cos(2*d*x + 2*c) - 2*f*cos(d*x + c
) - (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3 + (a*d
^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*cos(2*d*x + 2
*c)^2 + 4*(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)
*cos(d*x + c)^2 + 4*(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x +
a*d^2*e^3)*cos(d*x + c)*sin(2*d*x + 2*c) + (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x
^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*sin(2*d*x + 2*c)^2 + 4*(a*d^2*f^3*x^3 + 3
*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*sin(d*x + c)^2 - 2*(a*d^2*f
^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3 + 2*(a*d^2*f^3*x^3
 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*sin(d*x + c))*cos(2*d*x
 + 2*c) + 4*(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^
```

```
3)*sin(d*x + c))*integrate(1/2*(d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2 + 12*f^
2)*cos(d*x + c)/(a*d^2*f^4*x^4 + 4*a*d^2*e*f^3*x^3 + 6*a*d^2*e^2*f^2*x^2 +
4*a*d^2*e^3*f*x + a*d^2*e^4 + (a*d^2*f^4*x^4 + 4*a*d^2*e*f^3*x^3 + 6*a*d^2*
e^2*f^2*x^2 + 4*a*d^2*e^3*f*x + a*d^2*e^4)*cos(d*x + c)^2 + (a*d^2*f^4*x^4
+ 4*a*d^2*e*f^3*x^3 + 6*a*d^2*e^2*f^2*x^2 + 4*a*d^2*e^3*f*x + a*d^2*e^4)*si
n(d*x + c)^2 + 2*(a*d^2*f^4*x^4 + 4*a*d^2*e*f^3*x^3 + 6*a*d^2*e^2*f^2*x^2 +
 4*a*d^2*e^3*f*x + a*d^2*e^4)*sin(d*x + c)), x) - (a*d^2*f^3*x^3 + 3*a*d^2*
e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3 + (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^
2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*cos(2*d*x + 2*c)^2 + 4*(a*d^2*f^3*x^3 + 3*
a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*cos(d*x + c)^2 + 4*(a*d^2*f^
3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*cos(d*x + c)*sin(2
*d*x + 2*c) + (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*
e^3)*sin(2*d*x + 2*c)^2 + 4*(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^
2*f*x + a*d^2*e^3)*sin(d*x + c)^2 - 2*(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 +
3*a*d^2*e^2*f*x + a*d^2*e^3 + 2*(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^
2*e^2*f*x + a*d^2*e^3)*sin(d*x + c))*cos(2*d*x + 2*c) + 4*(a*d^2*f^3*x^3 +
3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*sin(d*x + c))*integrate(1/
2*cos(d*x + c)/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2 + 2*a*e*f*x + a*
e^2)*cos(d*x + c)^2 + (a*f^2*x^2 + 2*a*e*f*x + a*e^2)*sin(d*x + c)^2 - 2*(a
*f^2*x^2 + 2*a*e*f*x + a*e^2)*sin(d*x + c)), x) + ((d*f*x + d*e)*cos(d*x +
c) - 2*f*sin(d*x + c) - 2*f)*sin(2*d*x + 2*c) + (d*f*x + d*e)*sin(d*x + c))
/(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3 + (a*d^2*
f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*cos(2*d*x + 2*c)
^2 + 4*(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*co
s(d*x + c)^2 + 4*(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d
^2*e^3)*cos(d*x + c)*sin(2*d*x + 2*c) + (a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2
+ 3*a*d^2*e^2*f*x + a*d^2*e^3)*sin(2*d*x + 2*c)^2 + 4*(a*d^2*f^3*x^3 + 3*a*
d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*sin(d*x + c)^2 - 2*(a*d^2*f^3*
x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3 + 2*(a*d^2*f^3*x^3 +
3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*sin(d*x + c))*cos(2*d*x +
2*c) + 4*(a*d^2*f^3*x^3 + 3*a*d^2*e*f^2*x^2 + 3*a*d^2*e^2*f*x + a*d^2*e^3)*
sin(d*x + c))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cos(c+dx)\,\left(e+fx\right)^2\,\left(a+a\,\sin(c+dx)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(c + d*x)*(e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(1/(cos(c + d*x)*(e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sec(c+dx)}{e^2\sin(c+dx)+e^2+2efx\sin(c+dx)+2efx+f^2x^2\sin(c+dx)+f^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sec(c + d*x)/(e**2*sin(c + d*x) + e**2 + 2*e*f*x*sin(c + d*x) + 2*
e*f*x + f**2*x**2*sin(c + d*x) + f**2*x**2), x)/a
```

3.275 $\int \frac{(e+fx)^3 \sec^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=475

$$-\frac{f^3\text{Li}_3\left(-ie^{i(c+dx)}\right)}{ad^4}+\frac{f^3\text{Li}_3\left(ie^{i(c+dx)}\right)}{ad^4}+\frac{f^3\text{Li}_3\left(-e^{2i(c+dx)}\right)}{ad^4}+\frac{f^3\tanh^{-1}(\sin(c+dx))}{ad^4}+\frac{f^3\log(\cos(c+dx))}{ad^4}+\frac{if^2(e+f}{}$$

```
[Out] -2/3*I*(f*x+e)^3/a/d-2*I*f^2*(f*x+e)*polylog(2,-exp(2*I*(d*x+c)))/a/d^3+f^3
*arctanh(sin(d*x+c))/a/d^4+2*f*(f*x+e)^2*ln(1+exp(2*I*(d*x+c)))/a/d^2+f^3*l
n(cos(d*x+c))/a/d^4+I*f^2*(f*x+e)*polylog(2,-I*exp(I*(d*x+c)))/a/d^3-I*f*(f
*x+e)^2*arctan(exp(I*(d*x+c)))/a/d^2-I*f^2*(f*x+e)*polylog(2,I*exp(I*(d*x+c
)))/a/d^3-f^3*polylog(3,-I*exp(I*(d*x+c)))/a/d^4+f^3*polylog(3,I*exp(I*(d*x
+c)))/a/d^4+f^3*polylog(3,-exp(2*I*(d*x+c)))/a/d^4-f^2*(f*x+e)*sec(d*x+c)/a
/d^3-1/2*f*(f*x+e)^2*sec(d*x+c)^2/a/d^2-1/3*(f*x+e)^3*sec(d*x+c)^3/a/d+f^2*
(f*x+e)*tan(d*x+c)/a/d^3+2/3*(f*x+e)^3*tan(d*x+c)/a/d+1/2*f*(f*x+e)^2*sec(d
*x+c)*tan(d*x+c)/a/d^2+1/3*(f*x+e)^3*sec(d*x+c)^2*tan(d*x+c)/a/d
```

Rubi [A] time = 0.59, antiderivative size = 475, normalized size of antiderivative = 1.00, number of steps used = 20, number of rules used = 12, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4531, 4186, 4184, 3475, 3719, 2190, 2531, 2282, 6589, 4409, 3770, 4181}

$$\frac{if^2(e+fx)\text{PolyLog}\left(2,-ie^{i(c+dx)}\right)}{ad^3}-\frac{if^2(e+fx)\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{ad^3}-\frac{2if^2(e+fx)\text{PolyLog}\left(2,-e^{2i(c+dx)}\right)}{ad^3}-\frac{f^3\text{Po}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sec[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (((-2*I)/3)*(e + f*x)^3)/(a*d) - (I*f*(e + f*x)^2*ArcTan[E^(I*(c + d*x))])/
(a*d^2) + (f^3*ArcTanh[Sin[c + d*x]])/(a*d^4) + (2*f*(e + f*x)^2*Log[1 + E^
((2*I)*(c + d*x))])/(a*d^2) + (f^3*Log[Cos[c + d*x]])/(a*d^4) + (I*f^2*(e +
 f*x)*PolyLog[2, (-I)*E^(I*(c + d*x))])/(a*d^3) - (I*f^2*(e + f*x)*PolyLog[
2, I*E^(I*(c + d*x))])/(a*d^3) - ((2*I)*f^2*(e + f*x)*PolyLog[2, -E^((2*I)*
(c + d*x))])/(a*d^3) - (f^3*PolyLog[3, (-I)*E^(I*(c + d*x))])/(a*d^4) + (f^
3*PolyLog[3, I*E^(I*(c + d*x))])/(a*d^4) + (f^3*PolyLog[3, -E^((2*I)*(c + d
*x))])/(a*d^4) - (f^2*(e + f*x)*Sec[c + d*x])/(a*d^3) - (f*(e + f*x)^2*Sec[
c + d*x]^2)/(2*a*d^2) - ((e + f*x)^3*Sec[c + d*x]^3)/(3*a*d) + (f^2*(e + f*
x)*Tan[c + d*x])/(a*d^3) + (2*(e + f*x)^3*Tan[c + d*x])/(3*a*d) + (f*(e + f
*x)^2*Sec[c + d*x]*Tan[c + d*x])/(2*a*d^2) + ((e + f*x)^3*Sec[c + d*x]^2*Ta
n[c + d*x])/(3*a*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4531

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sec[c +
d*x]^(n + 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Sec[c + d*x]^(n + 1)*Tan[c
 + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && EqQ[a^2
 - b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\sec^2(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\sec^4(c+dx)\,dx}{a} - \frac{\int (e+fx)^3\sec^3(c+dx)\tan(c+dx)\,dx}{a}$$
$$= -\frac{f(e+fx)^2\sec^2(c+dx)}{2ad^2} - \frac{(e+fx)^3\sec^3(c+dx)}{3ad} + \frac{(e+fx)^3\sec^2(c+dx)\tan(}{3ad}$$
$$= -\frac{f^2(e+fx)\sec(c+dx)}{ad^3} - \frac{f(e+fx)^2\sec^2(c+dx)}{2ad^2} - \frac{(e+fx)^3\sec^3(c+dx)}{3ad} + f$$
$$= -\frac{2i(e+fx)^3}{3ad} - \frac{if(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^2} + \frac{f^3\tanh^{-1}(\sin(c+dx))}{ad^4} + \frac{f^3\log(c}{a}$$
$$= -\frac{2i(e+fx)^3}{3ad} - \frac{if(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^2} + \frac{f^3\tanh^{-1}(\sin(c+dx))}{ad^4} + \frac{2f(e+f}{}$$
$$= -\frac{2i(e+fx)^3}{3ad} - \frac{if(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^2} + \frac{f^3\tanh^{-1}(\sin(c+dx))}{ad^4} + \frac{2f(e+f}{}$$
$$= -\frac{2i(e+fx)^3}{3ad} - \frac{if(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^2} + \frac{f^3\tanh^{-1}(\sin(c+dx))}{ad^4} + \frac{2f(e+f}{}$$
$$= -\frac{2i(e+fx)^3}{3ad} - \frac{if(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^2} + \frac{f^3\tanh^{-1}(\sin(c+dx))}{ad^4} + \frac{2f(e+f}{}$$

Mathematica [B] time = 8.93, size = 1117, normalized size = 2.35

$$\frac{\frac{d^3(e+fx)^3}{-i+e^{ic}} + 3d^2 f\log\left(1-ie^{-i(c+dx)}\right)(e+fx)^2 + 6f^2\left(id(e+fx)\text{Li}_2\left(ie^{-i(c+dx)}\right) + f\text{Li}_3\left(ie^{-i(c+dx)}\right)\right)}{2ad^4} - \frac{f(\cos(c)+i\,\text{si}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sec[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((d^3*(e + f*x)^3)/(-I + E^(I*c)) + 3*d^2*f*(e + f*x)^2*Log[1 - I/E^(I*(c +
 d*x))] + 6*f^2*(I*d*(e + f*x)*PolyLog[2, I/E^(I*(c + d*x))] + f*PolyLog[3,
 I/E^(I*(c + d*x))]))/(2*a*d^4) - (f*(Cos[c] + I*Sin[c])*(5*d^2*e*f*x^2*Cos
[c] + (5*d^2*e^2 + 4*f^2)*x*(Cos[c] - I*Sin[c]) + (5*d^2*f^2*x^3*(Cos[c] -
I*Sin[c]))/3 - (5*I)*d^2*e*f*x^2*Sin[c] + (10*f^2*(d*x*PolyLog[2, (-I)*Cos[
c + d*x] - Sin[c + d*x]] - I*PolyLog[3, (-I)*Cos[c + d*x] - Sin[c + d*x]])*
(Cos[c] - I*Sin[c])*(1 - I*Cos[c] + Sin[c]))/d + 10*e*f*PolyLog[2, (-I)*Cos
[c + d*x] - Sin[c + d*x]]*(Cos[c] - I*(1 + Sin[c])) - 10*d*e*f*x*Log[1 + I*
Cos[c + d*x] + Sin[c + d*x]]*(Cos[c] - I*Sin[c])*(Cos[c] + I*(1 + Sin[c]))
- 5*d*f^2*x^2*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(Cos[c] - I*Sin[c])*(C
```

```
os[c] + I*(1 + Sin[c])) + ((5*d^2*e^2 + 4*f^2)*(d*x + I*Log[Cos[c + d*x] +
I*(1 + Sin[c + d*x])])*(I*Cos[c] + Sin[c])*(Cos[c] + I*(1 + Sin[c])))/d))/(
2*a*d^3*(Cos[c] + I*(1 + Sin[c]))) + (e^3*Sin[(d*x)/2] + 3*e^2*f*x*Sin[(d*x
)/2] + 3*e*f^2*x^2*Sin[(d*x)/2] + f^3*x^3*Sin[(d*x)/2])/(2*a*d*(Cos[c/2] -
Sin[c/2])*(Cos[c/2 + (d*x)/2] - Sin[c/2 + (d*x)/2])) + (e^3*Sin[(d*x)/2] +
3*e^2*f*x*Sin[(d*x)/2] + 3*e*f^2*x^2*Sin[(d*x)/2] + f^3*x^3*Sin[(d*x)/2])/(
3*a*d*(Cos[c/2] + Sin[c/2])*(Cos[c/2 + (d*x)/2] + Sin[c/2 + (d*x)/2])^3) +
(-(d*e^3*Cos[c/2]) - 3*e^2*f*Cos[c/2] - 3*d*e^2*f*x*Cos[c/2] - 6*e*f^2*x*Co
s[c/2] - 3*d*e*f^2*x^2*Cos[c/2] - 3*f^3*x^2*Cos[c/2] - d*f^3*x^3*Cos[c/2] +
 d*e^3*Sin[c/2] - 3*e^2*f*Sin[c/2] + 3*d*e^2*f*x*Sin[c/2] - 6*e*f^2*x*Sin[c
/2] + 3*d*e*f^2*x^2*Sin[c/2] - 3*f^3*x^2*Sin[c/2] + d*f^3*x^3*Sin[c/2])/(6*
a*d^2*(Cos[c/2] + Sin[c/2])*(Cos[c/2 + (d*x)/2] + Sin[c/2 + (d*x)/2])^2) +
(5*d^2*e^3*Sin[(d*x)/2] + 12*e*f^2*Sin[(d*x)/2] + 15*d^2*e^2*f*x*Sin[(d*x)/
2] + 12*f^3*x*Sin[(d*x)/2] + 15*d^2*e*f^2*x^2*Sin[(d*x)/2] + 5*d^2*f^3*x^3*
Sin[(d*x)/2])/(6*a*d^3*(Cos[c/2] + Sin[c/2])*(Cos[c/2 + (d*x)/2] + Sin[c/2
+ (d*x)/2]))
```

<u>fricas</u> [C] time = 0.63, size = 1527, normalized size = 3.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/12*(4*d^3*f^3*x^3 + 12*d^3*e*f^2*x^2 + 12*d^3*e^2*f*x + 4*d^3*e^3 - 4*(2*
d^3*f^3*x^3 + 6*d^3*e*f^2*x^2 + 2*d^3*e^3 + 3*d*e*f^2 + 3*(2*d^3*e^2*f + d*
f^3)*x)*cos(d*x + c)^2 - 6*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f)*cos(d*
x + c) + ((18*I*d*f^3*x + 18*I*d*e*f^2)*cos(d*x + c)*sin(d*x + c) + (18*I*d
*f^3*x + 18*I*d*e*f^2)*cos(d*x + c))*dilog(I*cos(d*x + c) + sin(d*x + c)) +
 ((-30*I*d*f^3*x - 30*I*d*e*f^2)*cos(d*x + c)*sin(d*x + c) + (-30*I*d*f^3*x
 - 30*I*d*e*f^2)*cos(d*x + c))*dilog(I*cos(d*x + c) - sin(d*x + c)) + ((-18
*I*d*f^3*x - 18*I*d*e*f^2)*cos(d*x + c)*sin(d*x + c) + (-18*I*d*f^3*x - 18*
I*d*e*f^2)*cos(d*x + c))*dilog(-I*cos(d*x + c) + sin(d*x + c)) + ((30*I*d*f
^3*x + 30*I*d*e*f^2)*cos(d*x + c)*sin(d*x + c) + (30*I*d*f^3*x + 30*I*d*e*f
^2)*cos(d*x + c))*dilog(-I*cos(d*x + c) - sin(d*x + c)) + 3*((5*d^2*e^2*f -
 10*c*d*e*f^2 + (5*c^2 + 4)*f^3)*cos(d*x + c)*sin(d*x + c) + (5*d^2*e^2*f -
 10*c*d*e*f^2 + (5*c^2 + 4)*f^3)*cos(d*x + c))*log(cos(d*x + c) + I*sin(d*x
 + c) + I) + 9*((d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c)*sin(d*x +
c) + (d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c))*log(cos(d*x + c) - I
*sin(d*x + c) + I) + 15*((d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f
^3)*cos(d*x + c)*sin(d*x + c) + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2
- c^2*f^3)*cos(d*x + c))*log(I*cos(d*x + c) + sin(d*x + c) + 1) + 9*((d^2*f
^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c)*sin(d*x + c) +
 (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c))*log(I*
cos(d*x + c) - sin(d*x + c) + 1) + 15*((d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d
```

```
*e*f^2 - c^2*f^3)*cos(d*x + c)*sin(d*x + c) + (d^2*f^3*x^2 + 2*d^2*e*f^2*x
+ 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c))*log(-I*cos(d*x + c) + sin(d*x + c) +
 1) + 9*((d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d*x + c)
*sin(d*x + c) + (d^2*f^3*x^2 + 2*d^2*e*f^2*x + 2*c*d*e*f^2 - c^2*f^3)*cos(d
*x + c))*log(-I*cos(d*x + c) - sin(d*x + c) + 1) + 3*((5*d^2*e^2*f - 10*c*d
*e*f^2 + (5*c^2 + 4)*f^3)*cos(d*x + c)*sin(d*x + c) + (5*d^2*e^2*f - 10*c*d
*e*f^2 + (5*c^2 + 4)*f^3)*cos(d*x + c))*log(-cos(d*x + c) + I*sin(d*x + c)
+ I) + 9*((d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c)*sin(d*x + c) + (
d^2*e^2*f - 2*c*d*e*f^2 + c^2*f^3)*cos(d*x + c))*log(-cos(d*x + c) - I*sin(
d*x + c) + I) + 18*(f^3*cos(d*x + c)*sin(d*x + c) + f^3*cos(d*x + c))*polyl
og(3, I*cos(d*x + c) + sin(d*x + c)) + 30*(f^3*cos(d*x + c)*sin(d*x + c) +
f^3*cos(d*x + c))*polylog(3, I*cos(d*x + c) - sin(d*x + c)) + 18*(f^3*cos(d
*x + c)*sin(d*x + c) + f^3*cos(d*x + c))*polylog(3, -I*cos(d*x + c) + sin(d
*x + c)) + 30*(f^3*cos(d*x + c)*sin(d*x + c) + f^3*cos(d*x + c))*polylog(3,
 -I*cos(d*x + c) - sin(d*x + c)) + 8*(d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3
*e^2*f*x + d^3*e^3)*sin(d*x + c))/(a*d^4*cos(d*x + c)*sin(d*x + c) + a*d^4*
cos(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\sec\left(dx+c\right)^{2}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sec(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.52, size = 1124, normalized size = 2.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sec(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] 5/a/d^2*f^2*e*ln(1-I*exp(I*(d*x+c)))*x+5/a/d^3*f^2*e*ln(1-I*exp(I*(d*x+c)))
*c+8/a/d^3*f^2*e*c*ln(exp(I*(d*x+c)))+3/2/a/d^4*f^3*c^2*ln(exp(I*(d*x+c))-I
)+3/2/a/d^2*e^2*f*ln(exp(I*(d*x+c))-I)+8/3*I/a/d^4*c^3*f^3-4/3*I/a/d*f^3*x^
3-4/a/d^2*f*ln(exp(I*(d*x+c)))*e^2-4/a/d^4*f^3*c^2*ln(exp(I*(d*x+c)))+5/2/a
/d^4*f^3*c^2*ln(exp(I*(d*x+c))+I)+5/2/a/d^2*f*ln(exp(I*(d*x+c))+I)*e^2-1/3*
(24*d^2*e*f^2*x^2*exp(I*(d*x+c))+24*d^2*e^2*f*x*exp(I*(d*x+c))+6*I*d*e*f^2*
x*exp(3*I*(d*x+c))+12*I*d^2*e^2*f*x+3*I*d*e^2*f*exp(3*I*(d*x+c))+6*I*f^3*x+
3*I*d*f^3*x^2*exp(I*(d*x+c))+3*I*d*f^3*x^2*exp(3*I*(d*x+c))+4*I*d^2*e^3+6*I
*e*f^2+12*I*d^2*e*f^2*x^2+4*I*d^2*f^3*x^3+8*d^2*e^3*exp(I*(d*x+c))+6*I*e*f^
```

```
2*exp(2*I*(d*x+c))+6*f^3*x*exp(I*(d*x+c))+6*e*f^2*exp(I*(d*x+c))+6*f^3*x*ex
p(3*I*(d*x+c))+6*e*f^2*exp(3*I*(d*x+c))+8*d^2*f^3*x^3*exp(I*(d*x+c))+6*I*f^
3*x*exp(2*I*(d*x+c))+6*I*d*e*f^2*x*exp(I*(d*x+c))+3*I*d*e^2*f*exp(I*(d*x+c)
))/(exp(I*(d*x+c))-I)/(exp(I*(d*x+c))+I)^3/d^3/a+5/2/a/d^2*f^3*ln(1-I*exp(I
*(d*x+c)))*x^2+4*I/a/d^3*c^2*f^3*x-3*I/a/d^3*e*f^2*polylog(2,-I*exp(I*(d*x+
c)))-5*I/a/d^3*e*f^2*polylog(2,I*exp(I*(d*x+c)))-3*I/a/d^3*polylog(2,-I*exp
(I*(d*x+c)))*f^3*x-4*I/a/d^3*c^2*e*f^2+3/2/a/d^2*ln(1+I*exp(I*(d*x+c)))*f^3
*x^2+3/a/d^2*ln(1+I*exp(I*(d*x+c)))*e*f^2*x+3/a/d^3*ln(1+I*exp(I*(d*x+c)))*
c*e*f^2-3/a/d^3*e*f^2*c*ln(exp(I*(d*x+c))-I)-5*I/a/d^3*polylog(2,I*exp(I*(d
*x+c)))*f^3*x-4*I/a/d*e*f^2*x^2-8*I/a/d^2*c*e*f^2*x+3*f^3*polylog(3,-I*exp(
I*(d*x+c)))/a/d^4+5*f^3*polylog(3,I*exp(I*(d*x+c)))/a/d^4-2/a/d^4*f^3*ln(ex
p(I*(d*x+c)))+2/a/d^4*f^3*ln(exp(I*(d*x+c))+I)-5/2/a/d^4*f^3*ln(1-I*exp(I*(
d*x+c)))*c^2-5/a/d^3*f^2*e*c*ln(exp(I*(d*x+c))+I)-3/2/a/d^4*ln(1+I*exp(I*(d
*x+c)))*c^2*f^3
```

maxima [B] time = 2.18, size = 5107, normalized size = 10.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/12*(24*c^2*e*f^2*(sin(d*x + c)/(cos(d*x + c) + 1) + 3*sin(d*x + c)^2/(cos
(d*x + c) + 1)^2 + 3*sin(d*x + c)^3/(cos(d*x + c) + 1)^3 - 1)/(a*d^2 + 2*a*
d^2*sin(d*x + c)/(cos(d*x + c) + 1) - 2*a*d^2*sin(d*x + c)^3/(cos(d*x + c)
+ 1)^3 - a*d^2*sin(d*x + c)^4/(cos(d*x + c) + 1)^4) + 6*(4*(8*(d*x + c)*cos
(d*x + c) - sin(3*d*x + 3*c) - sin(d*x + c))*cos(4*d*x + 4*c) + 16*(2*d*x +
 4*(d*x + c)*sin(d*x + c) + 2*c + cos(d*x + c))*cos(3*d*x + 3*c) + 8*cos(3*
d*x + 3*c)^2 + 8*cos(d*x + c)^2 + 5*(2*(2*sin(3*d*x + 3*c) + 2*sin(d*x + c)
 + 1)*cos(4*d*x + 4*c) - cos(4*d*x + 4*c)^2 - 4*cos(3*d*x + 3*c)^2 - 8*cos(
3*d*x + 3*c)*cos(d*x + c) - 4*cos(d*x + c)^2 - 4*(cos(3*d*x + 3*c) + cos(d*
x + c))*sin(4*d*x + 4*c) - sin(4*d*x + 4*c)^2 - 4*(2*sin(d*x + c) + 1)*sin(
3*d*x + 3*c) - 4*sin(3*d*x + 3*c)^2 - 4*sin(d*x + c)^2 - 4*sin(d*x + c) - 1
)*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) + 3*(2*(2*sin(3
*d*x + 3*c) + 2*sin(d*x + c) + 1)*cos(4*d*x + 4*c) - cos(4*d*x + 4*c)^2 - 4
*cos(3*d*x + 3*c)^2 - 8*cos(3*d*x + 3*c)*cos(d*x + c) - 4*cos(d*x + c)^2 -
4*(cos(3*d*x + 3*c) + cos(d*x + c))*sin(4*d*x + 4*c) - sin(4*d*x + 4*c)^2 -
 4*(2*sin(d*x + c) + 1)*sin(3*d*x + 3*c) - 4*sin(3*d*x + 3*c)^2 - 4*sin(d*x
 + c)^2 - 4*sin(d*x + c) - 1)*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*sin(d
*x + c) + 1) + 4*(4*d*x + 8*(d*x + c)*sin(d*x + c) + 4*c + cos(3*d*x + 3*c)
 + cos(d*x + c))*sin(4*d*x + 4*c) - 4*(16*(d*x + c)*cos(d*x + c) - 4*sin(d*
x + c) - 1)*sin(3*d*x + 3*c) + 8*sin(3*d*x + 3*c)^2 + 8*sin(d*x + c)^2 + 4*
sin(d*x + c))*c*e*f^2/(a*d^2*cos(4*d*x + 4*c)^2 + 4*a*d^2*cos(3*d*x + 3*c)^
2 + 8*a*d^2*cos(3*d*x + 3*c)*cos(d*x + c) + 4*a*d^2*cos(d*x + c)^2 + a*d^2*
sin(4*d*x + 4*c)^2 + 4*a*d^2*sin(3*d*x + 3*c)^2 + 4*a*d^2*sin(d*x + c)^2 +
```

4*a*d^2*sin(d*x + c) + a*d^2 - 2*(2*a*d^2*sin(3*d*x + 3*c) + 2*a*d^2*sin(d*
x + c) + a*d^2)*cos(4*d*x + 4*c) + 4*(a*d^2*cos(3*d*x + 3*c) + a*d^2*cos(d*
x + c))*sin(4*d*x + 4*c) + 4*(2*a*d^2*sin(d*x + c) + a*d^2)*sin(3*d*x + 3*c
)) - 24*c*e^2*f*(sin(d*x + c)/(cos(d*x + c) + 1) + 3*sin(d*x + c)^2/(cos(d*
x + c) + 1)^2 + 3*sin(d*x + c)^3/(cos(d*x + c) + 1)^3 - 1)/(a*d + 2*a*d*sin
(d*x + c)/(cos(d*x + c) + 1) - 2*a*d*sin(d*x + c)^3/(cos(d*x + c) + 1)^3 -
a*d*sin(d*x + c)^4/(cos(d*x + c) + 1)^4) - 3*(4*(8*(d*x + c)*cos(d*x + c) -
 sin(3*d*x + 3*c) - sin(d*x + c))*cos(4*d*x + 4*c) + 16*(2*d*x + 4*(d*x + c
)*sin(d*x + c) + 2*c + cos(d*x + c))*cos(3*d*x + 3*c) + 8*cos(3*d*x + 3*c)^
2 + 8*cos(d*x + c)^2 + 5*(2*(2*sin(3*d*x + 3*c) + 2*sin(d*x + c) + 1)*cos(4
*d*x + 4*c) - cos(4*d*x + 4*c)^2 - 4*cos(3*d*x + 3*c)^2 - 8*cos(3*d*x + 3*c
)*cos(d*x + c) - 4*cos(d*x + c)^2 - 4*(cos(3*d*x + 3*c) + cos(d*x + c))*sin
(4*d*x + 4*c) - sin(4*d*x + 4*c)^2 - 4*(2*sin(d*x + c) + 1)*sin(3*d*x + 3*c
) - 4*sin(3*d*x + 3*c)^2 - 4*sin(d*x + c)^2 - 4*sin(d*x + c) - 1)*log(cos(d
*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) + 3*(2*(2*sin(3*d*x + 3*c)
 + 2*sin(d*x + c) + 1)*cos(4*d*x + 4*c) - cos(4*d*x + 4*c)^2 - 4*cos(3*d*x
+ 3*c)^2 - 8*cos(3*d*x + 3*c)*cos(d*x + c) - 4*cos(d*x + c)^2 - 4*(cos(3*d*
x + 3*c) + cos(d*x + c))*sin(4*d*x + 4*c) - sin(4*d*x + 4*c)^2 - 4*(2*sin(d
*x + c) + 1)*sin(3*d*x + 3*c) - 4*sin(3*d*x + 3*c)^2 - 4*sin(d*x + c)^2 - 4
*sin(d*x + c) - 1)*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*sin(d*x + c) + 1
) + 4*(4*d*x + 8*(d*x + c)*sin(d*x + c) + 4*c + cos(3*d*x + 3*c) + cos(d*x
+ c))*sin(4*d*x + 4*c) - 4*(16*(d*x + c)*cos(d*x + c) - 4*sin(d*x + c) - 1)
*sin(3*d*x + 3*c) + 8*sin(3*d*x + 3*c)^2 + 8*sin(d*x + c)^2 + 4*sin(d*x + c
))*e^2*f/(a*d*cos(4*d*x + 4*c)^2 + 4*a*d*cos(3*d*x + 3*c)^2 + 8*a*d*cos(3*d
*x + 3*c)*cos(d*x + c) + 4*a*d*cos(d*x + c)^2 + a*d*sin(4*d*x + 4*c)^2 + 4*
a*d*sin(3*d*x + 3*c)^2 + 4*a*d*sin(d*x + c)^2 + 4*a*d*sin(d*x + c) + a*d -
2*(2*a*d*sin(3*d*x + 3*c) + 2*a*d*sin(d*x + c) + a*d)*cos(4*d*x + 4*c) + 4*
(a*d*cos(3*d*x + 3*c) + a*d*cos(d*x + c))*sin(4*d*x + 4*c) + 4*(2*a*d*sin(d
*x + c) + a*d)*sin(3*d*x + 3*c)) + 8*e^3*(sin(d*x + c)/(cos(d*x + c) + 1) +
 3*sin(d*x + c)^2/(cos(d*x + c) + 1)^2 + 3*sin(d*x + c)^3/(cos(d*x + c) + 1
)^3 - 1)/(a + 2*a*sin(d*x + c)/(cos(d*x + c) + 1) - 2*a*sin(d*x + c)^3/(cos
(d*x + c) + 1)^3 - a*sin(d*x + c)^4/(cos(d*x + c) + 1)^4) - 12*(24*d*e*f^2
- 8*(2*c^3 + 3*c)*f^3 - (6*(5*c^2 + 4)*f^3*cos(4*d*x + 4*c) + (60*I*c^2 + 4
8*I)*f^3*cos(3*d*x + 3*c) + (60*I*c^2 + 48*I)*f^3*cos(d*x + c) + (30*I*c^2
+ 24*I)*f^3*sin(4*d*x + 4*c) - 12*(5*c^2 + 4)*f^3*sin(3*d*x + 3*c) - 12*(5*
c^2 + 4)*f^3*sin(d*x + c) - 6*(5*c^2 + 4)*f^3)*arctan2(sin(d*x + c) + 1, co
s(d*x + c)) - (18*c^2*f^3*cos(4*d*x + 4*c) + 36*I*c^2*f^3*cos(3*d*x + 3*c)
+ 36*I*c^2*f^3*cos(d*x + c) + 18*I*c^2*f^3*sin(4*d*x + 4*c) - 36*c^2*f^3*si
n(3*d*x + 3*c) - 36*c^2*f^3*sin(d*x + c) - 18*c^2*f^3)*arctan2(sin(d*x + c)
 - 1, cos(d*x + c)) - (30*(d*x + c)^2*f^3 + 60*(d*e*f^2 - c*f^3)*(d*x + c)
- 30*((d*x + c)^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*cos(4*d*x + 4*c) + (
-60*I*(d*x + c)^2*f^3 + (-120*I*d*e*f^2 + 120*I*c*f^3)*(d*x + c))*cos(3*d*x
 + 3*c) + (-60*I*(d*x + c)^2*f^3 + (-120*I*d*e*f^2 + 120*I*c*f^3)*(d*x + c)
)*cos(d*x + c) + (-30*I*(d*x + c)^2*f^3 + (-60*I*d*e*f^2 + 60*I*c*f^3)*(d*x
 + c))*sin(4*d*x + 4*c) + 60*((d*x + c)^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x +

```
c))*sin(3*d*x + 3*c) + 60*((d*x + c)^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))
*sin(d*x + c))*arctan2(cos(d*x + c), sin(d*x + c) + 1) + (18*(d*x + c)^2*f^
3 + 36*(d*e*f^2 - c*f^3)*(d*x + c) - 18*((d*x + c)^2*f^3 + 2*(d*e*f^2 - c*f
^3)*(d*x + c))*cos(4*d*x + 4*c) - (36*I*(d*x + c)^2*f^3 + (72*I*d*e*f^2 - 7
2*I*c*f^3)*(d*x + c))*cos(3*d*x + 3*c) - (36*I*(d*x + c)^2*f^3 + (72*I*d*e*
f^2 - 72*I*c*f^3)*(d*x + c))*cos(d*x + c) - (18*I*(d*x + c)^2*f^3 + (36*I*d
*e*f^2 - 36*I*c*f^3)*(d*x + c))*sin(4*d*x + 4*c) + 36*((d*x + c)^2*f^3 + 2*
(d*e*f^2 - c*f^3)*(d*x + c))*sin(3*d*x + 3*c) + 36*((d*x + c)^2*f^3 + 2*(d*
e*f^2 - c*f^3)*(d*x + c))*sin(d*x + c))*arctan2(cos(d*x + c), -sin(d*x + c)
 + 1) + 8*(2*(d*x + c)^3*f^3 + 3*(2*c^2 + 1)*(d*x + c)*f^3 + 6*(d*e*f^2 - c
*f^3)*(d*x + c)^2)*cos(4*d*x + 4*c) - (-32*I*(d*x + c)^3*f^3 + 24*I*d*e*f^2
 - 12*(c^2 + 2*I*c)*f^3 - 12*(8*I*d*e*f^2 + (-8*I*c + 1)*f^3)*(d*x + c)^2 -
 (24*d*e*f^2 - (-96*I*c^2 + 24*c - 24*I)*f^3)*(d*x + c))*cos(3*d*x + 3*c) +
 24*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(2*d*x + 2*c) + (12*(d*x + c)^2*f^
3 - 24*I*d*e*f^2 - (-32*I*c^3 - 12*c^2 - 24*I*c)*f^3 + (24*d*e*f^2 - (24*c
- 24*I)*f^3)*(d*x + c))*cos(d*x + c) - (60*d*e*f^2 + 60*(d*x + c)*f^3 - 60*
c*f^3 - 60*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(4*d*x + 4*c) + (-120*I*d*e
*f^2 - 120*I*(d*x + c)*f^3 + 120*I*c*f^3)*cos(3*d*x + 3*c) + (-120*I*d*e*f^
2 - 120*I*(d*x + c)*f^3 + 120*I*c*f^3)*cos(d*x + c) + (-60*I*d*e*f^2 - 60*I
*(d*x + c)*f^3 + 60*I*c*f^3)*sin(4*d*x + 4*c) + 120*(d*e*f^2 + (d*x + c)*f^
3 - c*f^3)*sin(3*d*x + 3*c) + 120*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(d*x
 + c))*dilog(I*e^(I*d*x + I*c)) - (36*d*e*f^2 + 36*(d*x + c)*f^3 - 36*c*f^3
 - 36*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(4*d*x + 4*c) + (-72*I*d*e*f^2 -
 72*I*(d*x + c)*f^3 + 72*I*c*f^3)*cos(3*d*x + 3*c) + (-72*I*d*e*f^2 - 72*I*
(d*x + c)*f^3 + 72*I*c*f^3)*cos(d*x + c) + (-36*I*d*e*f^2 - 36*I*(d*x + c)*
f^3 + 36*I*c*f^3)*sin(4*d*x + 4*c) + 72*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*s
in(3*d*x + 3*c) + 72*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(d*x + c))*dilog(
-I*e^(I*d*x + I*c)) - (15*I*(d*x + c)^2*f^3 + (15*I*c^2 + 12*I)*f^3 + (30*I
*d*e*f^2 - 30*I*c*f^3)*(d*x + c) + (-15*I*(d*x + c)^2*f^3 + (-15*I*c^2 - 12
*I)*f^3 + (-30*I*d*e*f^2 + 30*I*c*f^3)*(d*x + c))*cos(4*d*x + 4*c) + 6*(5*(
d*x + c)^2*f^3 + (5*c^2 + 4)*f^3 + 10*(d*e*f^2 - c*f^3)*(d*x + c))*cos(3*d*
x + 3*c) + 6*(5*(d*x + c)^2*f^3 + (5*c^2 + 4)*f^3 + 10*(d*e*f^2 - c*f^3)*(d
*x + c))*cos(d*x + c) + 3*(5*(d*x + c)^2*f^3 + (5*c^2 + 4)*f^3 + 10*(d*e*f^
2 - c*f^3)*(d*x + c))*sin(4*d*x + 4*c) + (30*I*(d*x + c)^2*f^3 + (30*I*c^2
+ 24*I)*f^3 + (60*I*d*e*f^2 - 60*I*c*f^3)*(d*x + c))*sin(3*d*x + 3*c) + (30
*I*(d*x + c)^2*f^3 + (30*I*c^2 + 24*I)*f^3 + (60*I*d*e*f^2 - 60*I*c*f^3)*(d
*x + c))*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c)
 + 1) - (9*I*(d*x + c)^2*f^3 + 9*I*c^2*f^3 + (18*I*d*e*f^2 - 18*I*c*f^3)*(d
*x + c) + (-9*I*(d*x + c)^2*f^3 - 9*I*c^2*f^3 + (-18*I*d*e*f^2 + 18*I*c*f^3
)*(d*x + c))*cos(4*d*x + 4*c) + 18*((d*x + c)^2*f^3 + c^2*f^3 + 2*(d*e*f^2
- c*f^3)*(d*x + c))*cos(3*d*x + 3*c) + 18*((d*x + c)^2*f^3 + c^2*f^3 + 2*(d
*e*f^2 - c*f^3)*(d*x + c))*cos(d*x + c) + 9*((d*x + c)^2*f^3 + c^2*f^3 + 2*
(d*e*f^2 - c*f^3)*(d*x + c))*sin(4*d*x + 4*c) + (18*I*(d*x + c)^2*f^3 + 18*
I*c^2*f^3 + (36*I*d*e*f^2 - 36*I*c*f^3)*(d*x + c))*sin(3*d*x + 3*c) + (18*I
*(d*x + c)^2*f^3 + 18*I*c^2*f^3 + (36*I*d*e*f^2 - 36*I*c*f^3)*(d*x + c))*si
```

```
n(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*sin(d*x + c) + 1) - (-6
0*I*f^3*cos(4*d*x + 4*c) + 120*f^3*cos(3*d*x + 3*c) + 120*f^3*cos(d*x + c)
+ 60*f^3*sin(4*d*x + 4*c) + 120*I*f^3*sin(3*d*x + 3*c) + 120*I*f^3*sin(d*x
+ c) + 60*I*f^3)*polylog(3, I*e^(I*d*x + I*c)) - (-36*I*f^3*cos(4*d*x + 4*c
) + 72*f^3*cos(3*d*x + 3*c) + 72*f^3*cos(d*x + c) + 36*f^3*sin(4*d*x + 4*c)
 + 72*I*f^3*sin(3*d*x + 3*c) + 72*I*f^3*sin(d*x + c) + 36*I*f^3)*polylog(3,
 -I*e^(I*d*x + I*c)) - (-16*I*(d*x + c)^3*f^3 + (-48*I*c^2 - 24*I)*(d*x + c
)*f^3 + (-48*I*d*e*f^2 + 48*I*c*f^3)*(d*x + c)^2)*sin(4*d*x + 4*c) - (32*(d
*x + c)^3*f^3 - 24*d*e*f^2 + (-12*I*c^2 + 24*c)*f^3 + (96*d*e*f^2 - (96*c +
 12*I)*f^3)*(d*x + c)^2 - 24*(I*d*e*f^2 - (4*c^2 + I*c + 1)*f^3)*(d*x + c))
*sin(3*d*x + 3*c) - (-24*I*d*e*f^2 - 24*I*(d*x + c)*f^3 + 24*I*c*f^3)*sin(2
*d*x + 2*c) - (-12*I*(d*x + c)^2*f^3 - 24*d*e*f^2 + (32*c^3 - 12*I*c^2 + 24
*c)*f^3 + (-24*I*d*e*f^2 - 24*(-I*c - 1)*f^3)*(d*x + c))*sin(d*x + c))/(-12
*I*a*d^3*cos(4*d*x + 4*c) + 24*a*d^3*cos(3*d*x + 3*c) + 24*a*d^3*cos(d*x +
c) + 12*a*d^3*sin(4*d*x + 4*c) + 24*I*a*d^3*sin(3*d*x + 3*c) + 24*I*a*d^3*s
in(d*x + c) + 12*I*a*d^3))/d
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cos(c + d*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^{3}\sec^{2}{(c+dx)}}{\sin{(c+dx)}+1}\,dx + \int \frac{f^{3}x^{3}\sec^{2}{(c+dx)}}{\sin{(c+dx)}+1}\,dx + \int \frac{3ef^{2}x^{2}\sec^{2}{(c+dx)}}{\sin{(c+dx)}+1}\,dx + \int \frac{3e^{2}fx\sec^{2}{(c+dx)}}{\sin{(c+dx)}+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sec(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**3*sec(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(f**3*x**3*
sec(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(3*e*f**2*x**2*sec(c + d*x
)**2/(sin(c + d*x) + 1), x) + Integral(3*e**2*f*x*sec(c + d*x)**2/(sin(c +
d*x) + 1), x))/a
```

3.276 $\int \frac{(e+fx)^2\sec^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=343

$$\frac{if^2\text{Li}_2\left(-ie^{i(c+dx)}\right)}{3ad^3}-\frac{if^2\text{Li}_2\left(ie^{i(c+dx)}\right)}{3ad^3}-\frac{2if^2\text{Li}_2\left(-e^{2i(c+dx)}\right)}{3ad^3}+\frac{f^2\tan(c+dx)}{3ad^3}-\frac{f^2\sec(c+dx)}{3ad^3}+\frac{4f(e+fx)\log\left(1+e\right.}{3ad^2}$$

```
[Out] -2/3*I*(f*x+e)^2/a/d-2/3*I*f*(f*x+e)*arctan(exp(I*(d*x+c)))/a/d^2+4/3*f*(f*
x+e)*ln(1+exp(2*I*(d*x+c)))/a/d^2+1/3*I*f^2*polylog(2,-I*exp(I*(d*x+c)))/a/
d^3-1/3*I*f^2*polylog(2,I*exp(I*(d*x+c)))/a/d^3-2/3*I*f^2*polylog(2,-exp(2*
I*(d*x+c)))/a/d^3-1/3*f^2*sec(d*x+c)/a/d^3-1/3*f*(f*x+e)*sec(d*x+c)^2/a/d^2
-1/3*(f*x+e)^2*sec(d*x+c)^3/a/d+1/3*f^2*tan(d*x+c)/a/d^3+2/3*(f*x+e)^2*tan(
d*x+c)/a/d+1/3*f*(f*x+e)*sec(d*x+c)*tan(d*x+c)/a/d^2+1/3*(f*x+e)^2*sec(d*x+
c)^2*tan(d*x+c)/a/d
```

Rubi [A] time = 0.38, antiderivative size = 343, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 12, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4531, 4186, 3767, 8, 4184, 3719, 2190, 2279, 2391, 4409, 4185, 4181}

$$\frac{if^2\text{PolyLog}\left(2,-ie^{i(c+dx)}\right)}{3ad^3}-\frac{if^2\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{3ad^3}-\frac{2if^2\text{PolyLog}\left(2,-e^{2i(c+dx)}\right)}{3ad^3}+\frac{4f(e+fx)\log\left(1+e^{2i(c+dx)}\right)}{3ad^2}-$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sec[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (((-2*I)/3)*(e + f*x)^2)/(a*d) - (((2*I)/3)*f*(e + f*x)*ArcTan[E^(I*(c + d*
x))])/(a*d^2) + (4*f*(e + f*x)*Log[1 + E^((2*I)*(c + d*x))])/(3*a*d^2) + ((
I/3)*f^2*PolyLog[2, (-I)*E^(I*(c + d*x))])/(a*d^3) - ((I/3)*f^2*PolyLog[2,
I*E^(I*(c + d*x))])/(a*d^3) - (((2*I)/3)*f^2*PolyLog[2, -E^((2*I)*(c + d*x)
)])/(a*d^3) - (f^2*Sec[c + d*x])/(3*a*d^3) - (f*(e + f*x)*Sec[c + d*x]^2)/(
3*a*d^2) - ((e + f*x)^2*Sec[c + d*x]^3)/(3*a*d) + (f^2*Tan[c + d*x])/(3*a*d
^3) + (2*(e + f*x)^2*Tan[c + d*x])/(3*a*d) + (f*(e + f*x)*Sec[c + d*x]*Tan[
c + d*x])/(3*a*d^2) + ((e + f*x)^2*Sec[c + d*x]^2*Tan[c + d*x])/(3*a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
```

```
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4531

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sec[c +
d*x]^(n + 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Sec[c + d*x]^(n + 1)*Tan[c
 + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && EqQ[a^2
 - b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^2\sec^2(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\sec^4(c+dx)\,dx}{a} - \frac{\int (e+fx)^2\sec^3(c+dx)\tan(c+dx)\,dx}{a}$$

$$= -\frac{f(e+fx)\sec^2(c+dx)}{3ad^2} - \frac{(e+fx)^2\sec^3(c+dx)}{3ad} + \frac{(e+fx)^2\sec^2(c+dx)\tan(c}{3ad}$$

$$= -\frac{f^2\sec(c+dx)}{3ad^3} - \frac{f(e+fx)\sec^2(c+dx)}{3ad^2} - \frac{(e+fx)^2\sec^3(c+dx)}{3ad} + \frac{2(e+fx)^2}{3}$$

$$= -\frac{2i(e+fx)^2}{3ad} - \frac{2if(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{3ad^2} - \frac{f^2\sec(c+dx)}{3ad^3} - \frac{f(e+fx)\sec^2(c}{3ad^2}$$

$$= -\frac{2i(e+fx)^2}{3ad} - \frac{2if(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{3ad^2} + \frac{4f(e+fx)\log\left(1+e^{2i(c+dx)}\right)}{3ad^2} - \frac{f^2}{}$$

$$= -\frac{2i(e+fx)^2}{3ad} - \frac{2if(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{3ad^2} + \frac{4f(e+fx)\log\left(1+e^{2i(c+dx)}\right)}{3ad^2} + \frac{if^2}{}$$

$$= -\frac{2i(e+fx)^2}{3ad} - \frac{2if(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{3ad^2} + \frac{4f(e+fx)\log\left(1+e^{2i(c+dx)}\right)}{3ad^2} + \frac{if^2}{}$$

Mathematica [A] time = 7.04, size = 637, normalized size = 1.86

$$\frac{d^2e^2\sin(2(c+dx))+2d^2e^2\cos(c+dx)-4d^2e^2\cos(c+2dx)+2d^2efx\sin(2(c+dx))+4d^2efx\cos(c+dx)-8d^2efx\cos(c+2dx)+d^2f^2x^2\sin(2(c+dx))+2d^2f^2x^2}{\left(\cos\left(\frac{c}{2}\right)\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sec[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((12*d^2*f*((f*PolyLog[2, I*Cos[c + d*x] + Sin[c + d*x]]*(Cos[c] - I*(-1 +
Sin[c])))/d^2 + ((e + f*x)*Log[1 - I*Cos[c + d*x] - Sin[c + d*x]]*(1 - I*Co
s[c] - Sin[c]))/d + ((e + f*x)^2*(Cos[c] - I*Sin[c]))/(2*f))*(Cos[c] + I*Si
n[c]))/(Cos[c] + I*(-1 + Sin[c])) - (20*d^2*f*(Cos[c] + I*Sin[c])*(((e + f*
x)^2*(Cos[c] - I*Sin[c]))/(2*f) - ((e + f*x)*Log[1 + I*Cos[c + d*x] + Sin[c
 + d*x]]*(1 + I*Cos[c] + Sin[c]))/d + (f*PolyLog[2, (-I)*Cos[c + d*x] - Sin
[c + d*x]]*(Cos[c] - I*(1 + Sin[c])))/d^2))/(Cos[c] + I*(1 + Sin[c])) + (-2
*f^2*Cos[c] - 2*d*f*(e + f*x)*Cos[d*x] + 2*d^2*e^2*Cos[c + d*x] + 4*f^2*Cos
[c + d*x] + 4*d^2*e*f*x*Cos[c + d*x] + 2*d^2*f^2*x^2*Cos[c + d*x] - 2*d*e*f
*Cos[2*c + d*x] - 2*d*f^2*x*Cos[2*c + d*x] - 4*d^2*e^2*Cos[c + 2*d*x] - 2*f
^2*Cos[c + 2*d*x] - 8*d^2*e*f*x*Cos[c + 2*d*x] - 4*d^2*f^2*x^2*Cos[c + 2*d*
x] + 8*d^2*e^2*Sin[d*x] + 2*f^2*Sin[d*x] + 16*d^2*e*f*x*Sin[d*x] + 8*d^2*f^
```

```
2*x^2*Sin[d*x] + d^2*e^2*Sin[2*(c + d*x)] + 2*f^2*Sin[2*(c + d*x)] + 2*d^2*
e*f*x*Sin[2*(c + d*x)] + d^2*f^2*x^2*Sin[2*(c + d*x)] - 2*f^2*Sin[2*c + d*x
])/((Cos[c/2] - Sin[c/2])*(Cos[c/2] + Sin[c/2])*(Cos[(c + d*x)/2] - Sin[(c
+ d*x)/2])*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^3))/(12*a*d^3)
```

fricas [B] time = 0.56, size = 855, normalized size = 2.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/6*(2*d^2*f^2*x^2 + 4*d^2*e*f*x + 2*d^2*e^2 - 2*(2*d^2*f^2*x^2 + 4*d^2*e*f
*x + 2*d^2*e^2 + f^2)*cos(d*x + c)^2 - 2*(d*f^2*x + d*e*f)*cos(d*x + c) + (
3*I*f^2*cos(d*x + c)*sin(d*x + c) + 3*I*f^2*cos(d*x + c))*dilog(I*cos(d*x +
 c) + sin(d*x + c)) + (-5*I*f^2*cos(d*x + c)*sin(d*x + c) - 5*I*f^2*cos(d*x
 + c))*dilog(I*cos(d*x + c) - sin(d*x + c)) + (-3*I*f^2*cos(d*x + c)*sin(d*
x + c) - 3*I*f^2*cos(d*x + c))*dilog(-I*cos(d*x + c) + sin(d*x + c)) + (5*I
*f^2*cos(d*x + c)*sin(d*x + c) + 5*I*f^2*cos(d*x + c))*dilog(-I*cos(d*x + c
) - sin(d*x + c)) + 5*((d*e*f - c*f^2)*cos(d*x + c)*sin(d*x + c) + (d*e*f -
 c*f^2)*cos(d*x + c))*log(cos(d*x + c) + I*sin(d*x + c) + I) + 3*((d*e*f -
c*f^2)*cos(d*x + c)*sin(d*x + c) + (d*e*f - c*f^2)*cos(d*x + c))*log(cos(d*
x + c) - I*sin(d*x + c) + I) + 5*((d*f^2*x + c*f^2)*cos(d*x + c)*sin(d*x +
c) + (d*f^2*x + c*f^2)*cos(d*x + c))*log(I*cos(d*x + c) + sin(d*x + c) + 1)
 + 3*((d*f^2*x + c*f^2)*cos(d*x + c)*sin(d*x + c) + (d*f^2*x + c*f^2)*cos(d
*x + c))*log(I*cos(d*x + c) - sin(d*x + c) + 1) + 5*((d*f^2*x + c*f^2)*cos(
d*x + c)*sin(d*x + c) + (d*f^2*x + c*f^2)*cos(d*x + c))*log(-I*cos(d*x + c)
 + sin(d*x + c) + 1) + 3*((d*f^2*x + c*f^2)*cos(d*x + c)*sin(d*x + c) + (d*
f^2*x + c*f^2)*cos(d*x + c))*log(-I*cos(d*x + c) - sin(d*x + c) + 1) + 5*((
d*e*f - c*f^2)*cos(d*x + c)*sin(d*x + c) + (d*e*f - c*f^2)*cos(d*x + c))*lo
g(-cos(d*x + c) + I*sin(d*x + c) + I) + 3*((d*e*f - c*f^2)*cos(d*x + c)*sin
(d*x + c) + (d*e*f - c*f^2)*cos(d*x + c))*log(-cos(d*x + c) - I*sin(d*x + c
) + I) + 4*(d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*sin(d*x + c))/(a*d^3*cos(d
*x + c)*sin(d*x + c) + a*d^3*cos(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2 \sec\left(dx+c\right)^2}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sec(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.38, size = 573, normalized size = 1.67

$$-\frac{2\left(4d^2e^2\mathrm{e}^{i(dx+c)}+2id^2e^2+f^2\mathrm{e}^{3i(dx+c)}+if^2\mathrm{e}^{2i(dx+c)}+if^2+4d^2f^2x^2\mathrm{e}^{i(dx+c)}+2id^2f^2x^2+f^2\mathrm{e}^{i(dx+c)}+8d^2efx\,\mathrm{e}\right.}{3\left(\mathrm{e}^{i(dx+c)}-i\right)\left(\mathrm{e}^{i(dx+c)}+i\right)^3d^3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sec(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] -2/3*(4*d^2*e^2*exp(I*(d*x+c))+2*I*d^2*e^2+f^2*exp(3*I*(d*x+c))+I*f^2*exp(2
*I*(d*x+c))+I*f^2+4*d^2*f^2*x^2*exp(I*(d*x+c))+2*I*d^2*f^2*x^2+f^2*exp(I*(d
*x+c))+8*d^2*e*f*x*exp(I*(d*x+c))+I*d*f^2*x*exp(I*(d*x+c))+I*d*e*f*exp(I*(d
*x+c))+I*d*f^2*x*exp(3*I*(d*x+c))+I*d*e*f*exp(3*I*(d*x+c))+4*I*d^2*e*f*x)/(
exp(I*(d*x+c))-I)/(exp(I*(d*x+c))+I)^3/d^3/a+1/a/d^2*e*f*ln(exp(I*(d*x+c))-
I)+5/3/a/d^2*f*ln(exp(I*(d*x+c))+I)*e-8/3/a/d^2*f*ln(exp(I*(d*x+c)))*e-1/a/
d^3*f^2*c*ln(exp(I*(d*x+c))-I)-5/3/a/d^3*f^2*c*ln(exp(I*(d*x+c))+I)+8/3/a/d
^3*f^2*c*ln(exp(I*(d*x+c)))-4/3*I/a/d^3*f^2*c^2-I/a/d^3*f^2*polylog(2,-I*ex
p(I*(d*x+c)))-8/3*I/a/d^2*f^2*c*x+1/a/d^2*f^2*ln(1+I*exp(I*(d*x+c)))*x+1/a/
d^3*f^2*ln(1+I*exp(I*(d*x+c)))*c-5/3*I/a/d^3*f^2*polylog(2,I*exp(I*(d*x+c))
)+5/3/a/d^2*f^2*ln(1-I*exp(I*(d*x+c)))*x+5/3/a/d^3*f^2*ln(1-I*exp(I*(d*x+c)
))*c-4/3*I/a/d*f^2*x^2
```

maxima [B] time = 0.87, size = 1332, normalized size = 3.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(8*d^2*e^2 + 4*f^2*cos(2*d*x + 2*c) + 4*I*f^2*sin(2*d*x + 2*c) + 4*f^2 - (
10*d*e*f*cos(4*d*x + 4*c) + 20*I*d*e*f*cos(3*d*x + 3*c) + 20*I*d*e*f*cos(d*
x + c) + 10*I*d*e*f*sin(4*d*x + 4*c) - 20*d*e*f*sin(3*d*x + 3*c) - 20*d*e*f
*sin(d*x + c) - 10*d*e*f)*arctan2(sin(d*x + c) + 1, cos(d*x + c)) - (6*d*e*
f*cos(4*d*x + 4*c) + 12*I*d*e*f*cos(3*d*x + 3*c) + 12*I*d*e*f*cos(d*x + c)
+ 6*I*d*e*f*sin(4*d*x + 4*c) - 12*d*e*f*sin(3*d*x + 3*c) - 12*d*e*f*sin(d*x
 + c) - 6*d*e*f)*arctan2(sin(d*x + c) - 1, cos(d*x + c)) + (10*d*f^2*x*cos(
4*d*x + 4*c) + 20*I*d*f^2*x*cos(3*d*x + 3*c) + 20*I*d*f^2*x*cos(d*x + c) +
10*I*d*f^2*x*sin(4*d*x + 4*c) - 20*d*f^2*x*sin(3*d*x + 3*c) - 20*d*f^2*x*si
n(d*x + c) - 10*d*f^2*x)*arctan2(cos(d*x + c), sin(d*x + c) + 1) - (6*d*f^2
*x*cos(4*d*x + 4*c) + 12*I*d*f^2*x*cos(3*d*x + 3*c) + 12*I*d*f^2*x*cos(d*x
+ c) + 6*I*d*f^2*x*sin(4*d*x + 4*c) - 12*d*f^2*x*sin(3*d*x + 3*c) - 12*d*f^
2*x*sin(d*x + c) - 6*d*f^2*x)*arctan2(cos(d*x + c), -sin(d*x + c) + 1) + 8*
(d^2*f^2*x^2 + 2*d^2*e*f*x)*cos(4*d*x + 4*c) - (-16*I*d^2*f^2*x^2 - 4*d*e*f
 + 4*I*f^2 - 4*(8*I*d^2*e*f + d*f^2)*x)*cos(3*d*x + 3*c) - (16*I*d^2*e^2 -
```

```
4*d*f^2*x - 4*d*e*f + 4*I*f^2)*cos(d*x + c) + (10*f^2*cos(4*d*x + 4*c) + 20
*I*f^2*cos(3*d*x + 3*c) + 20*I*f^2*cos(d*x + c) + 10*I*f^2*sin(4*d*x + 4*c)
 - 20*f^2*sin(3*d*x + 3*c) - 20*f^2*sin(d*x + c) - 10*f^2)*dilog(I*e^(I*d*x
 + I*c)) + (6*f^2*cos(4*d*x + 4*c) + 12*I*f^2*cos(3*d*x + 3*c) + 12*I*f^2*c
os(d*x + c) + 6*I*f^2*sin(4*d*x + 4*c) - 12*f^2*sin(3*d*x + 3*c) - 12*f^2*s
in(d*x + c) - 6*f^2)*dilog(-I*e^(I*d*x + I*c)) - (5*I*d*f^2*x + 5*I*d*e*f +
 (-5*I*d*f^2*x - 5*I*d*e*f)*cos(4*d*x + 4*c) + 10*(d*f^2*x + d*e*f)*cos(3*d
*x + 3*c) + 10*(d*f^2*x + d*e*f)*cos(d*x + c) + 5*(d*f^2*x + d*e*f)*sin(4*d
*x + 4*c) + (10*I*d*f^2*x + 10*I*d*e*f)*sin(3*d*x + 3*c) + (10*I*d*f^2*x +
10*I*d*e*f)*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x +
 c) + 1) - (3*I*d*f^2*x + 3*I*d*e*f + (-3*I*d*f^2*x - 3*I*d*e*f)*cos(4*d*x
+ 4*c) + 6*(d*f^2*x + d*e*f)*cos(3*d*x + 3*c) + 6*(d*f^2*x + d*e*f)*cos(d*x
 + c) + 3*(d*f^2*x + d*e*f)*sin(4*d*x + 4*c) + (6*I*d*f^2*x + 6*I*d*e*f)*si
n(3*d*x + 3*c) + (6*I*d*f^2*x + 6*I*d*e*f)*sin(d*x + c))*log(cos(d*x + c)^2
 + sin(d*x + c)^2 - 2*sin(d*x + c) + 1) - (-8*I*d^2*f^2*x^2 - 16*I*d^2*e*f*
x)*sin(4*d*x + 4*c) - (16*d^2*f^2*x^2 - 4*I*d*e*f - 4*f^2 + (32*d^2*e*f - 4
*I*d*f^2)*x)*sin(3*d*x + 3*c) + (16*d^2*e^2 + 4*I*d*f^2*x + 4*I*d*e*f + 4*f
^2)*sin(d*x + c))/(-6*I*a*d^3*cos(4*d*x + 4*c) + 12*a*d^3*cos(3*d*x + 3*c)
+ 12*a*d^3*cos(d*x + c) + 6*a*d^3*sin(4*d*x + 4*c) + 12*I*a*d^3*sin(3*d*x +
 3*c) + 12*I*a*d^3*sin(d*x + c) + 6*I*a*d^3)
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cos(c + d*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^2\sec^2(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{f^2x^2\sec^2(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{2efx\sec^2(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sec(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**2*sec(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(f**2*x**2*
sec(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(2*e*f*x*sec(c + d*x)**2/(
sin(c + d*x) + 1), x))/a
```

3.277 $\int \frac{(e+fx)\sec^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=152

$$-\frac{f\sec^2(c+dx)}{6ad^2}+\frac{f\tanh^{-1}(\sin(c+dx))}{6ad^2}+\frac{2f\log(\cos(c+dx))}{3ad^2}+\frac{f\tan(c+dx)\sec(c+dx)}{6ad^2}+\frac{2(e+fx)\tan(c+dx}{3ad}$$

```
[Out] 1/6*f*arctanh(sin(d*x+c))/a/d^2+2/3*f*ln(cos(d*x+c))/a/d^2-1/6*f*sec(d*x+c)
^2/a/d^2-1/3*(f*x+e)*sec(d*x+c)^3/a/d+2/3*(f*x+e)*tan(d*x+c)/a/d+1/6*f*sec(
d*x+c)*tan(d*x+c)/a/d^2+1/3*(f*x+e)*sec(d*x+c)^2*tan(d*x+c)/a/d
```

Rubi [A] time = 0.15, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {4531, 4185, 4184, 3475, 4409, 3768, 3770}

$$-\frac{f\sec^2(c+dx)}{6ad^2}+\frac{f\tanh^{-1}(\sin(c+dx))}{6ad^2}+\frac{2f\log(\cos(c+dx))}{3ad^2}+\frac{f\tan(c+dx)\sec(c+dx)}{6ad^2}+\frac{2(e+fx)\tan(c+dx}{3ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sec[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (f*ArcTanh[Sin[c + d*x]])/(6*a*d^2) + (2*f*Log[Cos[c + d*x]])/(3*a*d^2) - (
f*Sec[c + d*x]^2)/(6*a*d^2) - ((e + f*x)*Sec[c + d*x]^3)/(3*a*d) + (2*(e +
f*x)*Tan[c + d*x])/(3*a*d) + (f*Sec[c + d*x]*Tan[c + d*x])/(6*a*d^2) + ((e
+ f*x)*Sec[c + d*x]^2*Tan[c + d*x])/(3*a*d)
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3768

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Csc[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[(b^2*(n - 2))/(n - 1), I
nt[(b*Csc[c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] &&
IntegerQ[2*n]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4531

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sec[c +
d*x]^(n + 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Sec[c + d*x]^(n + 1)*Tan[c
 + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && EqQ[a^2
 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(e+fx)\sec^2(c+dx)}{a+a\sin(c+dx)}\,dx &= \frac{\int (e+fx)\sec^4(c+dx)\,dx}{a} - \frac{\int (e+fx)\sec^3(c+dx)\tan(c+dx)\,dx}{a}\\ &= -\frac{f\sec^2(c+dx)}{6ad^2} - \frac{(e+fx)\sec^3(c+dx)}{3ad} + \frac{(e+fx)\sec^2(c+dx)\tan(c+dx)}{3ad} + \frac{2\int\\ &= -\frac{f\sec^2(c+dx)}{6ad^2} - \frac{(e+fx)\sec^3(c+dx)}{3ad} + \frac{2(e+fx)\tan(c+dx)}{3ad} + \frac{f\sec(c+dx)\,\text{ta}}{6ad^2}\\ &= \frac{f\tanh^{-1}(\sin(c+dx))}{6ad^2} + \frac{2f\log(\cos(c+dx))}{3ad^2} - \frac{f\sec^2(c+dx)}{6ad^2} - \frac{(e+fx)\sec^3(c+}{3ad}\end{aligned}$$

Mathematica [A] time = 1.11, size = 231, normalized size = 1.52

$$\frac{\cos(c+dx)\left(\sin(c+dx)\left(3f\log\left(\cos\left(\frac{1}{2}(c+dx)\right)-\sin\left(\frac{1}{2}(c+dx)\right)\right)+5f\log\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right.\right.\right.\right.}{6ad^2(\sin(c+dx)+1}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sec[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-2*d*(e + f*x)*(Cos[2*(c + d*x)] - 2*Sin[c + d*x]) + Cos[c + d*x]*(d*e - f
 - c*f + 3*f*Log[Cos[(c + d*x)/2] - Sin[(c + d*x)/2]] + 5*f*Log[Cos[(c + d*
x)/2] + Sin[(c + d*x)/2]] + (d*e - c*f + 3*f*Log[Cos[(c + d*x)/2] - Sin[(c
+ d*x)/2]] + 5*f*Log[Cos[(c + d*x)/2] + Sin[(c + d*x)/2]])*Sin[c + d*x]))/(
6*a*d^2*(Cos[(c + d*x)/2] - Sin[(c + d*x)/2])*(Cos[(c + d*x)/2] + Sin[(c +
d*x)/2])*(1 + Sin[c + d*x]))
```

fricas [A] time = 0.47, size = 156, normalized size = 1.03

$$\frac{4\,dfx-8\left(dfx+de\right)\cos\left(dx+c\right)^2+4\,de-2\,f\cos\left(dx+c\right)+5\left(f\cos\left(dx+c\right)\sin\left(dx+c\right)+f\cos\left(dx+c\right)\right)\log}{12\left(ad^2\cos\left(dx+c\right)\sin\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/12*(4*d*f*x - 8*(d*f*x + d*e)*cos(d*x + c)^2 + 4*d*e - 2*f*cos(d*x + c) +
 5*(f*cos(d*x + c)*sin(d*x + c) + f*cos(d*x + c))*log(sin(d*x + c) + 1) + 3
*(f*cos(d*x + c)*sin(d*x + c) + f*cos(d*x + c))*log(-sin(d*x + c) + 1) + 8*
(d*f*x + d*e)*sin(d*x + c))/(a*d^2*cos(d*x + c)*sin(d*x + c) + a*d^2*cos(d*
x + c))
```

giac [B] time = 8.78, size = 6656, normalized size = 43.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/12*(4*d*f*x*tan(1/2*d*x)^4*tan(1/2*c)^4 + 16*d*f*x*tan(1/2*d*x)^4*tan(1/
2*c)^3 + 16*d*f*x*tan(1/2*d*x)^3*tan(1/2*c)^4 + 4*d*e*tan(1/2*d*x)^4*tan(1/
2*c)^4 - 3*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*
c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(
1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^
2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*t
```

an(1/2*d*x)^4*tan(1/2*c)^4 - 5*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan (1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2 *tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c) ^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^4*tan(1/2*c)^4 - 24*d*f*x*tan(1/2*d*x)^4*ta n(1/2*c)^2 - 64*d*f*x*tan(1/2*d*x)^3*tan(1/2*c)^3 + 16*d*e*tan(1/2*d*x)^4*t an(1/2*c)^3 + 6*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan (1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2 *tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2* d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^4*tan(1/2*c)^3 + 10*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x) ^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^4*tan(1/2*c)^3 - 24*d*f*x*tan(1/2*d*x)^2*tan(1/2*c)^4 + 16*d*e*tan(1/2*d*x)^3*tan(1/2*c)^4 + 6*f*log(2*(tan(1/2* d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/ 2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2 *d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^3*tan(1/2*c)^4 + 10*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2* tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^ 2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan (1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2* d*x)^3*tan(1/2*c)^4 + 2*f*tan(1/2*d*x)^4*tan(1/2*c)^4 + 16*d*f*x*tan(1/2*d* x)^4*tan(1/2*c) - 24*d*e*tan(1/2*d*x)^4*tan(1/2*c)^2 - 64*d*e*tan(1/2*d*x)^ 3*tan(1/2*c)^3 + 12*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4 *tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d* x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^ 2 + 1))*tan(1/2*d*x)^3*tan(1/2*c)^3 + 20*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c) ^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2* d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)* tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2 *c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^3*tan(1/2*c)^3 + 16*d*f*x*tan(1/2 *d*x)*tan(1/2*c)^4 - 24*d*e*tan(1/2*d*x)^2*tan(1/2*c)^4 + 4*d*f*x*tan(1/2*d *x)^4 + 64*d*f*x*tan(1/2*d*x)^3*tan(1/2*c) + 16*d*e*tan(1/2*d*x)^4*tan(1/2* c) - 6*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2* c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1 /2*d*x)^4*tan(1/2*c) - 10*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2* d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1

/2*c)^2 + 1))*tan(1/2*d*x)^4*tan(1/2*c) + 144*d*f*x*tan(1/2*d*x)^2*tan(1/2*c)^2 - 36*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^3*tan(1/2*c)^2 - 60*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^3*tan(1/2*c)^2 + 64*d*f*x*tan(1/2*d*x)*tan(1/2*c)^3 - 36*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^2*tan(1/2*c)^3 - 60*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^2*tan(1/2*c)^3 - 8*f*tan(1/2*d*x)^3*tan(1/2*c)^3 + 4*d*f*x*tan(1/2*c)^4 + 16*d*e*tan(1/2*d*x)*tan(1/2*c)^4 - 6*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)*tan(1/2*c)^4 - 10*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)*tan(1/2*c)^4 - 16*d*f*x*tan(1/2*d*x)^3 + 4*d*e*tan(1/2*d*x)^4 + 3*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^4 + 5*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^4 + 64*d*e*tan(1/2*d*x)^3*tan(1/2*c) + 12*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)^3*tan(1/2*c) + 20*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1

/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*
x)^3*tan(1/2*c) + 144*d*e*tan(1/2*d*x)^2*tan(1/2*c)^2 - 16*d*f*x*tan(1/2*c)
^3 + 64*d*e*tan(1/2*d*x)*tan(1/2*c)^3 + 12*f*log(2*(tan(1/2*d*x)^4*tan(1/2*
c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/
2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x
)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1
/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)*tan(1/2*c)^3 + 20*f*log(2*(tan(
1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*ta
n(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x
)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan
(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)*tan(1/2*c)^3
 + 4*d*e*tan(1/2*c)^4 + 3*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*
d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(
1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 +
2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1
/2*c)^2 + 1))*tan(1/2*c)^4 + 5*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan
(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2
*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)
^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(
tan(1/2*c)^2 + 1))*tan(1/2*c)^4 - 24*d*f*x*tan(1/2*d*x)^2 - 16*d*e*tan(1/2*
d*x)^3 + 6*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*
c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(
1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^
2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*t
an(1/2*d*x)^3 + 10*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*
tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x
)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1
/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2
 + 1))*tan(1/2*d*x)^3 - 2*f*tan(1/2*d*x)^4 - 64*d*f*x*tan(1/2*d*x)*tan(1/2*
c) + 36*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c)
+ 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2
*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 +
 tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(
1/2*d*x)^2*tan(1/2*c) + 60*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2
*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan
(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 +
 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(
1/2*c)^2 + 1))*tan(1/2*d*x)^2*tan(1/2*c) - 8*f*tan(1/2*d*x)^3*tan(1/2*c) -
24*d*f*x*tan(1/2*c)^2 + 36*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2
*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan
(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 +
 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(
1/2*c)^2 + 1))*tan(1/2*d*x)*tan(1/2*c)^2 + 60*f*log(2*(tan(1/2*d*x)^4*tan(1
/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan
(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*

d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*ta n(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)*tan(1/2*c)^2 - 16*d*e*tan(1/ 2*c)^3 + 6*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2* c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^ 2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*t an(1/2*c)^3 + 10*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*ta n(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^ 2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2 *d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*c)^3 - 8*f*tan(1/2*d*x)*tan(1/2*c)^3 - 2*f*tan(1/2*c)^4 - 16*d *f*x*tan(1/2*d*x) - 24*d*e*tan(1/2*d*x)^2 - 16*d*f*x*tan(1/2*c) - 64*d*e*ta n(1/2*d*x)*tan(1/2*c) + 12*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2 *d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan (1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)*tan(1/2*c) + 20*f*log(2*(tan(1/2*d*x)^4*tan(1/2 *c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1 /2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d* x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x)*tan(1/2*c) - 24*d*e*tan(1/2*c) ^2 + 4*d*f*x - 16*d*e*tan(1/2*d*x) - 6*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d* x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*ta n(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x) - 10*f*log(2*(tan(1/2*d*x)^4*tan(1/ 2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d *x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan (1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*d*x) - 16*d*e*tan(1/2*c) - 6*f*log (2*(tan(1/2*d*x)^4*tan(1/2*c)^2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d *x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan (1/2*d*x)^3 + 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*c) - 10*f *log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*tan(1/2*d*x)^4*tan(1/2*c) - 2*tan(1 /2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2 *tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2* c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/(tan(1/2*c)^2 + 1))*tan(1/2*c) - 8*f*tan(1/2*d*x)*tan(1/2*c) + 4*d*e - 3*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^ 2 + 2*tan(1/2*d*x)^4*tan(1/2*c) + 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d *x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 - 2*tan(1/2*d*x)^3 + 2*tan(1/2*d*x)*t an(1/2*c)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 - 2*tan(1/2*d*x) - 2*tan(1/2* c) + 1)/(tan(1/2*c)^2 + 1)) - 5*f*log(2*(tan(1/2*d*x)^4*tan(1/2*c)^2 - 2*ta n(1/2*d*x)^4*tan(1/2*c) - 2*tan(1/2*d*x)^3*tan(1/2*c)^2 + tan(1/2*d*x)^4 + 2*tan(1/2*d*x)^2*tan(1/2*c)^2 + 2*tan(1/2*d*x)^3 - 2*tan(1/2*d*x)*tan(1/2*c

```
)^2 + 2*tan(1/2*d*x)^2 + tan(1/2*c)^2 + 2*tan(1/2*d*x) + 2*tan(1/2*c) + 1)/
(tan(1/2*c)^2 + 1)) + 2*f)/(a*d^2*tan(1/2*d*x)^4*tan(1/2*c)^4 - 2*a*d^2*tan
(1/2*d*x)^4*tan(1/2*c)^3 - 2*a*d^2*tan(1/2*d*x)^3*tan(1/2*c)^4 - 4*a*d^2*ta
n(1/2*d*x)^3*tan(1/2*c)^3 + 2*a*d^2*tan(1/2*d*x)^4*tan(1/2*c) + 12*a*d^2*ta
n(1/2*d*x)^3*tan(1/2*c)^2 + 12*a*d^2*tan(1/2*d*x)^2*tan(1/2*c)^3 + 2*a*d^2*
tan(1/2*d*x)*tan(1/2*c)^4 - a*d^2*tan(1/2*d*x)^4 - 4*a*d^2*tan(1/2*d*x)^3*t
an(1/2*c) - 4*a*d^2*tan(1/2*d*x)*tan(1/2*c)^3 - a*d^2*tan(1/2*c)^4 - 2*a*d^
2*tan(1/2*d*x)^3 - 12*a*d^2*tan(1/2*d*x)^2*tan(1/2*c) - 12*a*d^2*tan(1/2*d*
x)*tan(1/2*c)^2 - 2*a*d^2*tan(1/2*c)^3 - 4*a*d^2*tan(1/2*d*x)*tan(1/2*c) +
2*a*d^2*tan(1/2*d*x) + 2*a*d^2*tan(1/2*c) + a*d^2)
```

maple [B] time = 0.31, size = 466, normalized size = 3.07

$$-\frac{e}{2ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{2e}{3ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^{3}}+\frac{e}{ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^{2}}-\frac{3e}{2ad\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}+\frac{}{3a\left(\tan\left(\frac{dx}{2}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sec(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/2/a*e/d/(tan(1/2*d*x+1/2*c)-1)-2/3/a*e/d/(tan(1/2*d*x+1/2*c)+1)^3+1/a*e/
d/(tan(1/2*d*x+1/2*c)+1)^2-3/2/a*e/d/(tan(1/2*d*x+1/2*c)+1)+1/3/a*f/(tan(1/
2*d*x+1/2*c)+1)^3/(tan(1/2*d*x+1/2*c)-1)*x/d-4/3/a*f/(tan(1/2*d*x+1/2*c)+1)
^3/(tan(1/2*d*x+1/2*c)-1)*x/d*tan(1/2*d*x+1/2*c)-2/a*f/(tan(1/2*d*x+1/2*c)+
1)^3/(tan(1/2*d*x+1/2*c)-1)*x/d*tan(1/2*d*x+1/2*c)^2-4/3/a*f/(tan(1/2*d*x+1
/2*c)+1)^3/(tan(1/2*d*x+1/2*c)-1)*x/d*tan(1/2*d*x+1/2*c)^3+1/3/a*f/(tan(1/2
*d*x+1/2*c)+1)^3/(tan(1/2*d*x+1/2*c)-1)*x/d*tan(1/2*d*x+1/2*c)^4-1/3/a*f/(t
an(1/2*d*x+1/2*c)+1)^3/(tan(1/2*d*x+1/2*c)-1)/d^2*tan(1/2*d*x+1/2*c)+1/3/a*
f/(tan(1/2*d*x+1/2*c)+1)^3/(tan(1/2*d*x+1/2*c)-1)/d^2*tan(1/2*d*x+1/2*c)^3+
1/2/a*f/d^2*ln(tan(1/2*d*x+1/2*c)-1)+5/6/a*f/d^2*ln(tan(1/2*d*x+1/2*c)+1)-2
/3/a*f/d^2*ln(1+tan(1/2*d*x+1/2*c)^2)
```

maxima [B] time = 0.39, size = 1115, normalized size = 7.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/12*(8*c*f*(sin(d*x + c)/(cos(d*x + c) + 1) + 3*sin(d*x + c)^2/(cos(d*x +
 c) + 1)^2 + 3*sin(d*x + c)^3/(cos(d*x + c) + 1)^3 - 1)/(a*d + 2*a*d*sin(d*
x + c)/(cos(d*x + c) + 1) - 2*a*d*sin(d*x + c)^3/(cos(d*x + c) + 1)^3 - a*d
*sin(d*x + c)^4/(cos(d*x + c) + 1)^4) + (4*(8*(d*x + c)*cos(d*x + c) - sin(
3*d*x + 3*c) - sin(d*x + c))*cos(4*d*x + 4*c) + 16*(2*d*x + 4*(d*x + c)*sin
```

```
(d*x + c) + 2*c + cos(d*x + c))*cos(3*d*x + 3*c) + 8*cos(3*d*x + 3*c)^2 + 8
*cos(d*x + c)^2 + 5*(2*(2*sin(3*d*x + 3*c) + 2*sin(d*x + c) + 1)*cos(4*d*x
+ 4*c) - cos(4*d*x + 4*c)^2 - 4*cos(3*d*x + 3*c)^2 - 8*cos(3*d*x + 3*c)*cos
(d*x + c) - 4*cos(d*x + c)^2 - 4*(cos(3*d*x + 3*c) + cos(d*x + c))*sin(4*d*
x + 4*c) - sin(4*d*x + 4*c)^2 - 4*(2*sin(d*x + c) + 1)*sin(3*d*x + 3*c) - 4
*sin(3*d*x + 3*c)^2 - 4*sin(d*x + c)^2 - 4*sin(d*x + c) - 1)*log(cos(d*x +
c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) + 3*(2*(2*sin(3*d*x + 3*c) + 2*
sin(d*x + c) + 1)*cos(4*d*x + 4*c) - cos(4*d*x + 4*c)^2 - 4*cos(3*d*x + 3*c
)^2 - 8*cos(3*d*x + 3*c)*cos(d*x + c) - 4*cos(d*x + c)^2 - 4*(cos(3*d*x + 3
*c) + cos(d*x + c))*sin(4*d*x + 4*c) - sin(4*d*x + 4*c)^2 - 4*(2*sin(d*x +
c) + 1)*sin(3*d*x + 3*c) - 4*sin(3*d*x + 3*c)^2 - 4*sin(d*x + c)^2 - 4*sin(
d*x + c) - 1)*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*sin(d*x + c) + 1) + 4
*(4*d*x + 8*(d*x + c)*sin(d*x + c) + 4*c + cos(3*d*x + 3*c) + cos(d*x + c))
*sin(4*d*x + 4*c) - 4*(16*(d*x + c)*cos(d*x + c) - 4*sin(d*x + c) - 1)*sin(
3*d*x + 3*c) + 8*sin(3*d*x + 3*c)^2 + 8*sin(d*x + c)^2 + 4*sin(d*x + c))*f/
(a*d*cos(4*d*x + 4*c)^2 + 4*a*d*cos(3*d*x + 3*c)^2 + 8*a*d*cos(3*d*x + 3*c)
*cos(d*x + c) + 4*a*d*cos(d*x + c)^2 + a*d*sin(4*d*x + 4*c)^2 + 4*a*d*sin(3
*d*x + 3*c)^2 + 4*a*d*sin(d*x + c)^2 + 4*a*d*sin(d*x + c) + a*d - 2*(2*a*d*
sin(3*d*x + 3*c) + 2*a*d*sin(d*x + c) + a*d)*cos(4*d*x + 4*c) + 4*(a*d*cos(
3*d*x + 3*c) + a*d*cos(d*x + c))*sin(4*d*x + 4*c) + 4*(2*a*d*sin(d*x + c) +
 a*d)*sin(3*d*x + 3*c)) - 8*e*(sin(d*x + c)/(cos(d*x + c) + 1) + 3*sin(d*x
+ c)^2/(cos(d*x + c) + 1)^2 + 3*sin(d*x + c)^3/(cos(d*x + c) + 1)^3 - 1)/(a
 + 2*a*sin(d*x + c)/(cos(d*x + c) + 1) - 2*a*sin(d*x + c)^3/(cos(d*x + c) +
 1)^3 - a*sin(d*x + c)^4/(cos(d*x + c) + 1)^4))/d
```

mupad [B] time = 7.67, size = 240, normalized size = 1.58

$$\frac{2\left(d\,e+d\,f\,x\right)}{3\,a\,d^2\,\left(3\,{\mathrm{e}}^{c\,1{}\mathrm{i}+d\,x\,1{}\mathrm{i}}-{\mathrm{e}}^{c\,2{}\mathrm{i}+d\,x\,2{}\mathrm{i}}\,3{}\mathrm{i}-{\mathrm{e}}^{c\,3{}\mathrm{i}+d\,x\,3{}\mathrm{i}}+1{}\mathrm{i}\right)}-\frac{3\,d\,e+3\,d\,f\,x+f\,2{}\mathrm{i}}{6\,a\,d^2\,\left({\mathrm{e}}^{c\,1{}\mathrm{i}+d\,x\,1{}\mathrm{i}}+1{}\mathrm{i}\right)}+\frac{e+f\,x}{2\,a\,d\,\left({\mathrm{e}}^{c\,1{}\mathrm{i}+d\,x\,1{}\mathrm{i}}-\mathrm{i}\right)}-\frac{\left(24\,d\,e+2\right.}{24\,a\,d^2\,\left({\mathrm{e}}^{c\,2{}\mathrm{i}+d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cos(c + d*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] (2*(d*e + d*f*x))/(3*a*d^2*(3*exp(c*1i + d*x*1i) - exp(c*2i + d*x*2i)*3i -
exp(c*3i + d*x*3i) + 1i)) - (f*2i + 3*d*e + 3*d*f*x)/(6*a*d^2*(exp(c*1i + d
*x*1i) + 1i)) + (e + f*x)/(2*a*d*(exp(c*1i + d*x*1i) - 1i)) - ((24*d*e - f*
8i + 24*d*f*x)*1i)/(24*a*d^2*(exp(c*1i + d*x*1i)*2i + exp(c*2i + d*x*2i) -
1)) - (f*x*4i)/(3*a*d) + (f*log(exp(c*1i + d*x*1i) - 1i))/(2*a*d^2) + (5*f*
log(exp(c*1i + d*x*1i) + 1i))/(6*a*d^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e\sec^2(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{fx\sec^2(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e*sec(c + d*x)**2/(sin(c + d*x) + 1), x) + Integral(f*x*sec(c + d
*x)**2/(sin(c + d*x) + 1), x))/a
```

3.278 $\int \frac{\sec^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=42

$$\frac{2\tan(c+dx)}{3ad}-\frac{\sec(c+dx)}{3d(a\sin(c+dx)+a)}$$

```
[Out] -1/3*sec(d*x+c)/d/(a+a*sin(d*x+c))+2/3*tan(d*x+c)/a/d
```

Rubi [A] time = 0.05, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2672, 3767, 8}

$$\frac{2\tan(c+dx)}{3ad}-\frac{\sec(c+dx)}{3d(a\sin(c+dx)+a)}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[c + d*x]^2/(a + a*Sin[c + d*x]),x]
```

```
[Out] -Sec[c + d*x]/(3*d*(a + a*Sin[c + d*x])) + (2*Tan[c + d*x])/(3*a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2672

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_), x_Symbol] :> Simp[(b*(g*Cos[e + f*x])^(p + 1)*(a + b*Sin[e + f*x
])^m)/(a*f*g*Simplify[2*m + p + 1]), x] + Dist[Simplify[m + p + 1]/(a*Simpl
ify[2*m + p + 1]), Int[(g*Cos[e + f*x])^p*(a + b*Sin[e + f*x])^(m + 1), x],
 x] /; FreeQ[{a, b, e, f, g, m, p}, x] && EqQ[a^2 - b^2, 0] && ILtQ[Simplif
y[m + p + 1], 0] && NeQ[2*m + p + 1, 0] &&  !IGtQ[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rubi steps

$$\int \frac{\sec^2(c+dx)}{a+a\sin(c+dx)}\,dx = -\frac{\sec(c+dx)}{3d(a+a\sin(c+dx))} + \frac{2\int \sec^2(c+dx)\,dx}{3a}$$
$$= -\frac{\sec(c+dx)}{3d(a+a\sin(c+dx))} - \frac{2\,\mathrm{Subst}(\int 1\,dx, x, -\tan(c+dx))}{3ad}$$
$$= -\frac{\sec(c+dx)}{3d(a+a\sin(c+dx))} + \frac{2\tan(c+dx)}{3ad}$$

Mathematica [**A**] time = 0.06, size = 45, normalized size = 1.07

$$\frac{2\tan(c+dx) - \cos(2(c+dx))\sec(c+dx)}{3ad(\sin(c+dx)+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[c + d*x]^2/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-(Cos[2*(c + d*x)]*Sec[c + d*x]) + 2*Tan[c + d*x])/(3*a*d*(1 + Sin[c + d*x
]))
```

fricas [**A**] time = 0.42, size = 49, normalized size = 1.17

$$-\frac{2\,\cos\left(dx+c\right)^2 - 2\,\sin\left(dx+c\right) - 1}{3\left(ad\cos\left(dx+c\right)\sin\left(dx+c\right) + ad\cos\left(dx+c\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/3*(2*cos(d*x + c)^2 - 2*sin(d*x + c) - 1)/(a*d*cos(d*x + c)*sin(d*x + c)
 + a*d*cos(d*x + c))
```

giac [**A**] time = 0.27, size = 67, normalized size = 1.60

$$-\frac{\frac{3}{a\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)-1\right)} + \frac{9\,\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2+12\,\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+7}{a\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+1\right)^3}}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/6*(3/(a*(tan(1/2*d*x + 1/2*c) - 1)) + (9*tan(1/2*d*x + 1/2*c)^2 + 12*tan
(1/2*d*x + 1/2*c) + 7)/(a*(tan(1/2*d*x + 1/2*c) + 1)^3))/d
```

maple [A] time = 0.12, size = 70, normalized size = 1.67

$$\frac{-\frac{1}{2\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{2}{3\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^{3}}+\frac{1}{\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)^{2}}-\frac{3}{2\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}}{da}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] 2/d/a*(-1/4/(tan(1/2*d*x+1/2*c)-1)-1/3/(tan(1/2*d*x+1/2*c)+1)^3+1/2/(tan(1/
2*d*x+1/2*c)+1)^2-3/4/(tan(1/2*d*x+1/2*c)+1))
```

maxima [B] time = 0.32, size = 129, normalized size = 3.07

$$\frac{2\left(\frac{\sin(dx+c)}{\cos(dx+c)+1}+\frac{3\sin(dx+c)^{2}}{(\cos(dx+c)+1)^{2}}+\frac{3\sin(dx+c)^{3}}{(\cos(dx+c)+1)^{3}}-1\right)}{3\left(a+\frac{2a\sin(dx+c)}{\cos(dx+c)+1}-\frac{2a\sin(dx+c)^{3}}{(\cos(dx+c)+1)^{3}}-\frac{a\sin(dx+c)^{4}}{(\cos(dx+c)+1)^{4}}\right)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 2/3*(sin(d*x + c)/(cos(d*x + c) + 1) + 3*sin(d*x + c)^2/(cos(d*x + c) + 1)^
2 + 3*sin(d*x + c)^3/(cos(d*x + c) + 1)^3 - 1)/((a + 2*a*sin(d*x + c)/(cos(
d*x + c) + 1) - 2*a*sin(d*x + c)^3/(cos(d*x + c) + 1)^3 - a*sin(d*x + c)^4/
(cos(d*x + c) + 1)^4)*d)
```

mupad [B] time = 2.80, size = 71, normalized size = 1.69

$$-\frac{2\left(3\tan\left(\frac{c}{2}+\frac{dx}{2}\right)^{3}+3\tan\left(\frac{c}{2}+\frac{dx}{2}\right)^{2}+\tan\left(\frac{c}{2}+\frac{dx}{2}\right)-1\right)}{3ad\left(\tan\left(\frac{c}{2}+\frac{dx}{2}\right)-1\right)\left(\tan\left(\frac{c}{2}+\frac{dx}{2}\right)+1\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(c + d*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] -(2*(tan(c/2 + (d*x)/2) + 3*tan(c/2 + (d*x)/2)^2 + 3*tan(c/2 + (d*x)/2)^3 -
 1))/(3*a*d*(tan(c/2 + (d*x)/2) - 1)*(tan(c/2 + (d*x)/2) + 1)^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sec^2(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sec(c + d*x)**2/(sin(c + d*x) + 1), x)/a
```

3.279 $\int \frac{\sec^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sec^2(c+dx)}{(e+fx)(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sec(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sec^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sec[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Sec[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sec^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx = \int \frac{\sec^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 20.56, size = 0, normalized size = 0.00

$$\int \frac{\sec^2(c+dx)}{(e+fx)(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sec[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Sec[c + d*x]^2/((e + f*x)*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sec(dx+c)^2}{afx+ae+\left(afx+ae\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")

[Out] integral(sec(d*x + c)^2/(a*f*x + a*e + (a*f*x + a*e)*sin(d*x + c)), x)

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sec(dx+c)^2}{(fx+e)(a\sin(dx+c)+a)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")

[Out] integrate(sec(d*x + c)^2/((f*x + e)*(a*sin(d*x + c) + a)), x)

maple [A] time = 3.90, size = 0, normalized size = 0.00

$$\int \frac{\sec^2(dx+c)}{(fx+e)(a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(sec(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x)

[Out] int(sec(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x)

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(d*x+c)^2/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")

[Out] -1/3*(4*f^2*cos(2*d*x + 2*c)*cos(d*x + c) - 2*(d*f^2*x + d*e*f)*cos(3*d*x + 3*c)^2 + 2*f^2*cos(d*x + c) - 2*(d*f^2*x + d*e*f)*cos(d*x + c)^2 - 2*(d*f^2*x + d*e*f)*sin(3*d*x + 3*c)^2 - 2*(d*f^2*x + d*e*f)*sin(d*x + c)^2 + (2*f^2*cos(3*d*x + 3*c) - 2*f^2*sin(2*d*x + 2*c) + 2*(4*d^2*f^2*x^2 + 8*d^2*e*f*x + 4*d^2*e^2 + f^2)*cos(d*x + c) + (d*f^2*x + d*e*f)*sin(3*d*x + 3*c) + (d*f^2*x + d*e*f)*sin(d*x + c))*cos(4*d*x + 4*c) + 2*(4*d^2*f^2*x^2 + 8*d^2*e*f*x + 4*d^2*e^2 + 2*f^2*cos(2*d*x + 2*c) + f^2 - 2*(d*f^2*x + d*e*f)*cos(d*x + c) + 8*(d^2*f^2*x^2 + 2*d^2*e*f*x + d^2*e^2)*sin(d*x + c))*cos(3*d*x + 3*c) + 3*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3 + (a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cos(4*d*x + 4*c)^2 + 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cos(3*d*x + 3*c)^2 + 8*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cos(3*d*x + 3*c)*cos(d*x + c) + 4*(a*d^3*f^3*x^3 + 3*

```
a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cos(d*x + c)^2 + (a*d^3*f^3*
x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*sin(4*d*x + 4*c)^2 +
 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*sin(3*
d*x + 3*c)^2 + 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d
^3*e^3)*sin(d*x + c)^2 - 2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2
*f*x + a*d^3*e^3 + 2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x +
 a*d^3*e^3)*sin(3*d*x + 3*c) + 2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d
^3*e^2*f*x + a*d^3*e^3)*sin(d*x + c))*cos(4*d*x + 4*c) + 4*((a*d^3*f^3*x^3
+ 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cos(3*d*x + 3*c) + (a*d^
3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cos(d*x + c))*
sin(4*d*x + 4*c) + 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x +
 a*d^3*e^3 + 2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3
*e^3)*sin(d*x + c))*sin(3*d*x + 3*c) + 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2
 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*sin(d*x + c))*integrate(1/6*(5*d^2*f^3*x^2
+ 10*d^2*e*f^2*x + 5*d^2*e^2*f + 12*f^3)*cos(d*x + c)/(a*d^3*f^4*x^4 + 4*a*
d^3*e*f^3*x^3 + 6*a*d^3*e^2*f^2*x^2 + 4*a*d^3*e^3*f*x + a*d^3*e^4 + (a*d^3*
f^4*x^4 + 4*a*d^3*e*f^3*x^3 + 6*a*d^3*e^2*f^2*x^2 + 4*a*d^3*e^3*f*x + a*d^3
*e^4)*cos(d*x + c)^2 + (a*d^3*f^4*x^4 + 4*a*d^3*e*f^3*x^3 + 6*a*d^3*e^2*f^2
*x^2 + 4*a*d^3*e^3*f*x + a*d^3*e^4)*sin(d*x + c)^2 + 2*(a*d^3*f^4*x^4 + 4*a
*d^3*e*f^3*x^3 + 6*a*d^3*e^2*f^2*x^2 + 4*a*d^3*e^3*f*x + a*d^3*e^4)*sin(d*x
 + c)), x) - 3*(a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d
^3*e^3*f + (a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3*e
^3*f)*cos(4*d*x + 4*c)^2 + 4*(a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*e
^2*f^2*x + a*d^3*e^3*f)*cos(3*d*x + 3*c)^2 + 8*(a*d^3*f^4*x^3 + 3*a*d^3*e*f
^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3*e^3*f)*cos(3*d*x + 3*c)*cos(d*x + c) + 4
*(a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3*e^3*f)*cos(
d*x + c)^2 + (a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3
*e^3*f)*sin(4*d*x + 4*c)^2 + 4*(a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3
*e^2*f^2*x + a*d^3*e^3*f)*sin(3*d*x + 3*c)^2 + 4*(a*d^3*f^4*x^3 + 3*a*d^3*e
*f^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3*e^3*f)*sin(d*x + c)^2 - 2*(a*d^3*f^4*x
^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3*e^3*f + 2*(a*d^3*f^4*x^3
 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3*e^3*f)*sin(3*d*x + 3*c) +
2*(a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3*e^3*f)*sin
(d*x + c))*cos(4*d*x + 4*c) + 4*((a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d
^3*e^2*f^2*x + a*d^3*e^3*f)*cos(3*d*x + 3*c) + (a*d^3*f^4*x^3 + 3*a*d^3*e*f
^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3*e^3*f)*cos(d*x + c))*sin(4*d*x + 4*c) +
4*(a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3*e^3*f + 2*
(a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*e^2*f^2*x + a*d^3*e^3*f)*sin(d
*x + c))*sin(3*d*x + 3*c) + 4*(a*d^3*f^4*x^3 + 3*a*d^3*e*f^3*x^2 + 3*a*d^3*
e^2*f^2*x + a*d^3*e^3*f)*sin(d*x + c))*integrate(1/2*cos(d*x + c)/(a*d*f^2*
x^2 + 2*a*d*e*f*x + a*d*e^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*cos(d*x
 + c)^2 + (a*d*f^2*x^2 + 2*a*d*e*f*x + a*d*e^2)*sin(d*x + c)^2 - 2*(a*d*f^2
*x^2 + 2*a*d*e*f*x + a*d*e^2)*sin(d*x + c)), x) + (4*d^2*f^2*x^2 + 8*d^2*e*
f*x + 4*d^2*e^2 + 2*f^2*cos(2*d*x + 2*c) + 2*f^2*sin(3*d*x + 3*c) + 2*f^2 -
 (d*f^2*x + d*e*f)*cos(3*d*x + 3*c) - (d*f^2*x + d*e*f)*cos(d*x + c) + 2*(4
```

```
*d^2*f^2*x^2 + 8*d^2*e*f*x + 4*d^2*e^2 + f^2)*sin(d*x + c))*sin(4*d*x + 4*c
) - (d*f^2*x + d*e*f - 4*f^2*sin(2*d*x + 2*c) + 16*(d^2*f^2*x^2 + 2*d^2*e*f
*x + d^2*e^2)*cos(d*x + c) + 4*(d*f^2*x + d*e*f)*sin(d*x + c))*sin(3*d*x +
3*c) + 2*(2*f^2*sin(d*x + c) + f^2)*sin(2*d*x + 2*c) - (d*f^2*x + d*e*f)*si
n(d*x + c))/(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^
3 + (a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cos(4
*d*x + 4*c)^2 + 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*
d^3*e^3)*cos(3*d*x + 3*c)^2 + 8*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^
3*e^2*f*x + a*d^3*e^3)*cos(3*d*x + 3*c)*cos(d*x + c) + 4*(a*d^3*f^3*x^3 + 3
*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cos(d*x + c)^2 + (a*d^3*f^3
*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*sin(4*d*x + 4*c)^2
+ 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*sin(3
*d*x + 3*c)^2 + 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*
d^3*e^3)*sin(d*x + c)^2 - 2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^
2*f*x + a*d^3*e^3 + 2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x
+ a*d^3*e^3)*sin(3*d*x + 3*c) + 2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*
d^3*e^2*f*x + a*d^3*e^3)*sin(d*x + c))*cos(4*d*x + 4*c) + 4*((a*d^3*f^3*x^3
 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cos(3*d*x + 3*c) + (a*d
^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*cos(d*x + c))
*sin(4*d*x + 4*c) + 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x
+ a*d^3*e^3 + 2*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^2 + 3*a*d^3*e^2*f*x + a*d^
3*e^3)*sin(d*x + c))*sin(3*d*x + 3*c) + 4*(a*d^3*f^3*x^3 + 3*a*d^3*e*f^2*x^
2 + 3*a*d^3*e^2*f*x + a*d^3*e^3)*sin(d*x + c))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cos(c+d\,x)^2\,\left(e+f\,x\right)\,\left(a+a\,\sin(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(c + d*x)^2*(e + f*x)*(a + a*sin(c + d*x))),x)
```

```
[Out] int(1/(cos(c + d*x)^2*(e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sec^2(c+dx)}{e\sin(c+dx)+e+fx\sin(c+dx)+fx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)**2/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sec(c + d*x)**2/(e*sin(c + d*x) + e + f*x*sin(c + d*x) + f*x), x)/
a
```

3.280 $\int \frac{\sec^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sec^2(c+dx)}{(e+fx)^2(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sec(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sec^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sec[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Sec[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sec^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx=\int \frac{\sec^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 26.66, size = 0, normalized size = 0.00

$$\int \frac{\sec^2(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sec[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Sec[c + d*x]^2/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sec(dx+c)^2}{af^2x^2+2\,aefx+ae^2+\left(af^2x^2+2\,aefx+ae^2\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(sec(d*x + c)^2/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2 + 2*a*e
*f*x + a*e^2)*sin(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 6.60, size = 0, normalized size = 0.00

$$\int \frac{\sec^2(dx+c)}{(fx+e)^2(a+a\sin(dx+c))}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int(sec(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^2/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cos(c+d\,x)^2\,\left(e+f\,x\right)^2\,\left(a+a\,\sin(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(c + d*x)^2*(e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(1/(cos(c + d*x)^2*(e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sec^2(c+dx)}{e^2\sin(c+dx)+e^2+2efx\sin(c+dx)+2efx+f^2x^2\sin(c+dx)+f^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)**2/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sec(c + d*x)**2/(e**2*sin(c + d*x) + e**2 + 2*e*f*x*sin(c + d*x) +
 2*e*f*x + f**2*x**2*sin(c + d*x) + f**2*x**2), x)/a
```

3.281 $\int \frac{(e+fx)^3 \sec^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=698

$$\frac{5if^3\text{Li}_2\left(-ie^{i(c+dx)}\right)}{2ad^4}-\frac{5if^3\text{Li}_2\left(ie^{i(c+dx)}\right)}{2ad^4}-\frac{if^3\text{Li}_2\left(-e^{2i(c+dx)}\right)}{2ad^4}-\frac{9if^3\text{Li}_4\left(-ie^{i(c+dx)}\right)}{4ad^4}+\frac{9if^3\text{Li}_4\left(ie^{i(c+dx)}\right)}{4ad^4}+\frac{f^3\tan(c+d}{4ad^4}$$

```
[Out] -1/2*I*f*(f*x+e)^2/a/d^2+5/2*I*f^3*polylog(2,-I*exp(I*(d*x+c)))/a/d^4+9/8*I
*f*(f*x+e)^2*polylog(2,-I*exp(I*(d*x+c)))/a/d^2+f^2*(f*x+e)*ln(1+exp(2*I*(d
*x+c)))/a/d^3-1/2*I*f^3*polylog(2,-exp(2*I*(d*x+c)))/a/d^4-5*I*f^2*(f*x+e)*
arctan(exp(I*(d*x+c)))/a/d^3-9/8*I*f*(f*x+e)^2*polylog(2,I*exp(I*(d*x+c)))/
a/d^2-3/4*I*(f*x+e)^3*arctan(exp(I*(d*x+c)))/a/d+9/4*I*f^3*polylog(4,I*exp(
I*(d*x+c)))/a/d^4-9/4*f^2*(f*x+e)*polylog(3,-I*exp(I*(d*x+c)))/a/d^3+9/4*f^
2*(f*x+e)*polylog(3,I*exp(I*(d*x+c)))/a/d^3-5/2*I*f^3*polylog(2,I*exp(I*(d*
x+c)))/a/d^4-9/4*I*f^3*polylog(4,-I*exp(I*(d*x+c)))/a/d^4-1/4*f^3*sec(d*x+c
)/a/d^4-9/8*f*(f*x+e)^2*sec(d*x+c)/a/d^2-1/4*f^2*(f*x+e)*sec(d*x+c)^2/a/d^3
-1/4*f*(f*x+e)^2*sec(d*x+c)^3/a/d^2-1/4*(f*x+e)^3*sec(d*x+c)^4/a/d+1/4*f^3*
tan(d*x+c)/a/d^4+1/2*f*(f*x+e)^2*tan(d*x+c)/a/d^2+1/4*f^2*(f*x+e)*sec(d*x+c
)*tan(d*x+c)/a/d^3+3/8*(f*x+e)^3*sec(d*x+c)*tan(d*x+c)/a/d+1/4*f*(f*x+e)^2*
sec(d*x+c)^2*tan(d*x+c)/a/d^2+1/4*(f*x+e)^3*sec(d*x+c)^3*tan(d*x+c)/a/d
```

Rubi [A] time = 0.74, antiderivative size = 698, normalized size of antiderivative = 1.00, number of steps used = 32, number of rules used = 16, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.571$, Rules used = {4531, 4186, 4185, 4181, 2279, 2391, 2531, 6609, 2282, 6589, 4409, 3767, 8, 4184, 3719, 2190}

$$-\frac{9f^2(e+fx)\text{PolyLog}\left(3,-ie^{i(c+dx)}\right)}{4ad^3}+\frac{9f^2(e+fx)\text{PolyLog}\left(3,ie^{i(c+dx)}\right)}{4ad^3}+\frac{9if(e+fx)^2\text{PolyLog}\left(2,-ie^{i(c+dx)}\right)}{8ad^2}-\frac{9i}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sec[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-I/2)*f*(e + f*x)^2)/(a*d^2) - ((5*I)*f^2*(e + f*x)*ArcTan[E^(I*(c + d*x)
)])/(a*d^3) - (((3*I)/4)*(e + f*x)^3*ArcTan[E^(I*(c + d*x))])/(a*d) + (f^2*
(e + f*x)*Log[1 + E^((2*I)*(c + d*x))])/(a*d^3) + (((5*I)/2)*f^3*PolyLog[2,
 (-I)*E^(I*(c + d*x))])/(a*d^4) + (((9*I)/8)*f*(e + f*x)^2*PolyLog[2, (-I)*
E^(I*(c + d*x))])/(a*d^2) - (((5*I)/2)*f^3*PolyLog[2, I*E^(I*(c + d*x))])/(
a*d^4) - (((9*I)/8)*f*(e + f*x)^2*PolyLog[2, I*E^(I*(c + d*x))])/(a*d^2) -
((I/2)*f^3*PolyLog[2, -E^((2*I)*(c + d*x))])/(a*d^4) - (9*f^2*(e + f*x)*Pol
yLog[3, (-I)*E^(I*(c + d*x))])/(4*a*d^3) + (9*f^2*(e + f*x)*PolyLog[3, I*E^
(I*(c + d*x))])/(4*a*d^3) - (((9*I)/4)*f^3*PolyLog[4, (-I)*E^(I*(c + d*x))]
)/(a*d^4) + (((9*I)/4)*f^3*PolyLog[4, I*E^(I*(c + d*x))])/(a*d^4) - (f^3*Se
c[c + d*x])/(4*a*d^4) - (9*f*(e + f*x)^2*Sec[c + d*x])/(8*a*d^2) - (f^2*(e
```

```
+ f*x)*Sec[c + d*x]^2)/(4*a*d^3) - (f*(e + f*x)^2*Sec[c + d*x]^3)/(4*a*d^2)
 - ((e + f*x)^3*Sec[c + d*x]^4)/(4*a*d) + (f^3*Tan[c + d*x])/(4*a*d^4) + (f
*(e + f*x)^2*Tan[c + d*x])/(2*a*d^2) + (f^2*(e + f*x)*Sec[c + d*x]*Tan[c +
d*x])/(4*a*d^3) + (3*(e + f*x)^3*Sec[c + d*x]*Tan[c + d*x])/(8*a*d) + (f*(e
 + f*x)^2*Sec[c + d*x]^2*Tan[c + d*x])/(4*a*d^2) + ((e + f*x)^3*Sec[c + d*x
]^3*Tan[c + d*x])/(4*a*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4531

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sec[c +
d*x]^(n + 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Sec[c + d*x]^(n + 1)*Tan[c
 + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && EqQ[a^2
 - b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\sec^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\sec^5(c+dx)\,dx}{a} - \frac{\int (e+fx)^3\sec^4(c+dx)\tan(c+dx)\,dx}{a}$$

$$= -\frac{f(e+fx)^2\sec^3(c+dx)}{4ad^2} - \frac{(e+fx)^3\sec^4(c+dx)}{4ad} + \frac{(e+fx)^3\sec^3(c+dx)\tan(c}{4ad}$$

$$= -\frac{f^3\sec(c+dx)}{4ad^4} - \frac{9f(e+fx)^2\sec(c+dx)}{8ad^2} - \frac{f^2(e+fx)\sec^2(c+dx)}{4ad^3} - \frac{f(e+fx)}{}$$

$$= -\frac{5if^2(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3i(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} - \frac{f^3\sec(c+dx)}{4ad^4} - \frac{9f}{}$$

$$= -\frac{if(e+fx)^2}{2ad^2} - \frac{5if^2(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3i(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} + \frac{9if(e}{}$$

$$= -\frac{if(e+fx)^2}{2ad^2} - \frac{5if^2(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3i(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} + \frac{f^2(e}{}$$

$$= -\frac{if(e+fx)^2}{2ad^2} - \frac{5if^2(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3i(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} + \frac{f^2(e}{}$$

$$= -\frac{if(e+fx)^2}{2ad^2} - \frac{5if^2(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{ad^3} - \frac{3i(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} + \frac{f^2(e}{}$$

Mathematica [B] time = 10.36, size = 1901, normalized size = 2.72

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sec[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-3*(4*d^2*e^3*x + 16*e*f^2*x + 6*d^2*e^2*f*x^2 + 8*f^3*x^2 + 4*d^2*e*f^2*x
^3 + d^2*f^3*x^4 + (4*e*(d^2*e^2 + 4*f^2)*((-I)*d*x + Log[-Cos[c + d*x] - I
*(-1 + Sin[c + d*x])])*(Cos[c] + I*(-1 + Sin[c])))/d + (4*f*(3*d^2*e^2 + 4*
f^2)*x*Log[1 - I*Cos[c + d*x] - Sin[c + d*x]]*(Cos[c] + I*(-1 + Sin[c])))/d
 + 12*d*e*f^2*x^2*Log[1 - I*Cos[c + d*x] - Sin[c + d*x]]*(Cos[c] + I*(-1 +
Sin[c])) + 4*d*f^3*x^3*Log[1 - I*Cos[c + d*x] - Sin[c + d*x]]*(Cos[c] + I*(
-1 + Sin[c])) + (24*e*f^2*(I*d*x*PolyLog[2, I*Cos[c + d*x] + Sin[c + d*x]]
+ PolyLog[3, I*Cos[c + d*x] + Sin[c + d*x]])*(Cos[c] + I*(-1 + Sin[c])))/d
+ (12*f^3*(I*d^2*x^2*PolyLog[2, I*Cos[c + d*x] + Sin[c + d*x]] + 2*d*x*Poly
Log[3, I*Cos[c + d*x] + Sin[c + d*x]] - (2*I)*PolyLog[4, I*Cos[c + d*x] + S
in[c + d*x]])*(Cos[c] + I*(-1 + Sin[c])))/d^2 + (4*f*(3*d^2*e^2 + 4*f^2)*Po
lyLog[2, I*Cos[c + d*x] + Sin[c + d*x]]*(1 + I*Cos[c] - Sin[c]))/d^2))/(32*
a*d^2*(Cos[c] + I*(-1 + Sin[c]))) - ((28*f^2 + 3*d^2*(e + f*x)^2)^2/f + 12*
```

```
f*(9*d^2*e^2 + 28*f^2)*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*x]]*(1 - I*
Cos[c] + Sin[c]) + 216*d*e*f^2*(d*x*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c +
d*x]] - I*PolyLog[3, (-I)*Cos[c + d*x] - Sin[c + d*x]])*(1 - I*Cos[c] + Sin
[c]) + 108*f^3*(d^2*x^2*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*x]] - (2*I
)*d*x*PolyLog[3, (-I)*Cos[c + d*x] - Sin[c + d*x]] - 2*PolyLog[4, (-I)*Cos[
c + d*x] - Sin[c + d*x]])*(1 - I*Cos[c] + Sin[c]) - 12*d*f*(9*d^2*e^2 + 28*
f^2)*x*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(Cos[c] + I*(1 + Sin[c])) - 1
08*d^3*e*f^2*x^2*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(Cos[c] + I*(1 + Si
n[c])) - 36*d^3*f^3*x^3*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(Cos[c] + I*
(1 + Sin[c])) + (12*I)*d*e*(3*d^2*e^2 + 28*f^2)*(d*x + I*Log[Cos[c + d*x] +
 I*(1 + Sin[c + d*x])])*(Cos[c] + I*(1 + Sin[c])))/(96*a*d^4*(Cos[c] + I*(1
 + Sin[c]))) + ((3*e^3*x*Cos[c])/(4*a) + (((3*I)/4)*e^3*x*Sin[c])/a)/(1 + C
os[2*c] + I*Sin[2*c]) + ((9*e^2*f*x^2*Cos[c])/(8*a) + (((9*I)/8)*e^2*f*x^2*
Sin[c])/a)/(1 + Cos[2*c] + I*Sin[2*c]) + ((3*e*f^2*x^3*Cos[c])/(4*a) + (((3
*I)/4)*e*f^2*x^3*Sin[c])/a)/(1 + Cos[2*c] + I*Sin[2*c]) + ((3*f^3*x^4*Cos[c
])/(16*a) + (((3*I)/16)*f^3*x^4*Sin[c])/a)/(1 + Cos[2*c] + I*Sin[2*c]) + (e
^3 + 3*e^2*f*x + 3*e*f^2*x^2 + f^3*x^3)/(8*a*d*(Cos[c/2 + (d*x)/2] - Sin[c/
2 + (d*x)/2])^2) - (3*(e^2*f*Sin[(d*x)/2] + 2*e*f^2*x*Sin[(d*x)/2] + f^3*x^
2*Sin[(d*x)/2]))/(4*a*d^2*(Cos[c/2] - Sin[c/2])*(Cos[c/2 + (d*x)/2] - Sin[c
/2 + (d*x)/2])) + (-e^3 - 3*e^2*f*x - 3*e*f^2*x^2 - f^3*x^3)/(8*a*d*(Cos[c/
2 + (d*x)/2] + Sin[c/2 + (d*x)/2])^4) + (e^2*f*Sin[(d*x)/2] + 2*e*f^2*x*Sin
[(d*x)/2] + f^3*x^2*Sin[(d*x)/2])/(4*a*d^2*(Cos[c/2] + Sin[c/2])*(Cos[c/2 +
 (d*x)/2] + Sin[c/2 + (d*x)/2])^3) + (-2*d^2*e^3*Cos[c/2] - d*e^2*f*Cos[c/2
] - 2*e*f^2*Cos[c/2] - 6*d^2*e^2*f*x*Cos[c/2] - 2*d*e*f^2*x*Cos[c/2] - 2*f^
3*x*Cos[c/2] - 6*d^2*e*f^2*x^2*Cos[c/2] - d*f^3*x^2*Cos[c/2] - 2*d^2*f^3*x^
3*Cos[c/2] - 2*d^2*e^3*Sin[c/2] + d*e^2*f*Sin[c/2] - 2*e*f^2*Sin[c/2] - 6*d
^2*e^2*f*x*Sin[c/2] + 2*d*e*f^2*x*Sin[c/2] - 2*f^3*x*Sin[c/2] - 6*d^2*e*f^2
*x^2*Sin[c/2] + d*f^3*x^2*Sin[c/2] - 2*d^2*f^3*x^3*Sin[c/2])/(8*a*d^3*(Cos[
c/2] + Sin[c/2])*(Cos[c/2 + (d*x)/2] + Sin[c/2 + (d*x)/2])^2) + (7*d^2*e^2*
f*Sin[(d*x)/2] + 2*f^3*Sin[(d*x)/2] + 14*d^2*e*f^2*x*Sin[(d*x)/2] + 7*d^2*f
^3*x^2*Sin[(d*x)/2])/(4*a*d^4*(Cos[c/2] + Sin[c/2])*(Cos[c/2 + (d*x)/2] + S
in[c/2 + (d*x)/2]))
```

fricas [C] time = 0.82, size = 2566, normalized size = 3.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/16*(2*d^3*f^3*x^3 + 6*d^3*e*f^2*x^2 + 6*d^3*e^2*f*x + 2*d^3*e^3 - 4*(2*d^
2*f^3*x^2 + 4*d^2*e*f^2*x + 2*d^2*e^2*f + f^3)*cos(d*x + c)^3 - 2*(3*d^3*f^
3*x^3 + 9*d^3*e*f^2*x^2 + 3*d^3*e^3 + 2*d*e*f^2 + (9*d^3*e^2*f + 2*d*f^3)*x
)*cos(d*x + c)^2 - 14*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f)*cos(d*x + c
) + ((-9*I*d^2*f^3*x^2 - 18*I*d^2*e*f^2*x - 9*I*d^2*e^2*f - 12*I*f^3)*cos(d
```

```
*x + c)^2*sin(d*x + c) + (-9*I*d^2*f^3*x^2 - 18*I*d^2*e*f^2*x - 9*I*d^2*e^2
*f - 12*I*f^3)*cos(d*x + c)^2)*dilog(I*cos(d*x + c) + sin(d*x + c)) + ((-9*
I*d^2*f^3*x^2 - 18*I*d^2*e*f^2*x - 9*I*d^2*e^2*f - 28*I*f^3)*cos(d*x + c)^2
*sin(d*x + c) + (-9*I*d^2*f^3*x^2 - 18*I*d^2*e*f^2*x - 9*I*d^2*e^2*f - 28*I
*f^3)*cos(d*x + c)^2)*dilog(I*cos(d*x + c) - sin(d*x + c)) + ((9*I*d^2*f^3*
x^2 + 18*I*d^2*e*f^2*x + 9*I*d^2*e^2*f + 12*I*f^3)*cos(d*x + c)^2*sin(d*x +
 c) + (9*I*d^2*f^3*x^2 + 18*I*d^2*e*f^2*x + 9*I*d^2*e^2*f + 12*I*f^3)*cos(d
*x + c)^2)*dilog(-I*cos(d*x + c) + sin(d*x + c)) + ((9*I*d^2*f^3*x^2 + 18*I
*d^2*e*f^2*x + 9*I*d^2*e^2*f + 28*I*f^3)*cos(d*x + c)^2*sin(d*x + c) + (9*I
*d^2*f^3*x^2 + 18*I*d^2*e*f^2*x + 9*I*d^2*e^2*f + 28*I*f^3)*cos(d*x + c)^2)
*dilog(-I*cos(d*x + c) - sin(d*x + c)) + ((3*d^3*e^3 - 9*c*d^2*e^2*f + (9*c
^2 + 28)*d*e*f^2 - (3*c^3 + 28*c)*f^3)*cos(d*x + c)^2*sin(d*x + c) + (3*d^3
*e^3 - 9*c*d^2*e^2*f + (9*c^2 + 28)*d*e*f^2 - (3*c^3 + 28*c)*f^3)*cos(d*x +
 c)^2)*log(cos(d*x + c) + I*sin(d*x + c) + I) - 3*((d^3*e^3 - 3*c*d^2*e^2*f
 + (3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3)*cos(d*x + c)^2*sin(d*x + c) + (d^
3*e^3 - 3*c*d^2*e^2*f + (3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3)*cos(d*x + c)
^2)*log(cos(d*x + c) - I*sin(d*x + c) + I) + ((3*d^3*f^3*x^3 + 9*d^3*e*f^2*
x^2 + 9*c*d^2*e^2*f - 9*c^2*d*e*f^2 + (3*c^3 + 28*c)*f^3 + (9*d^3*e^2*f + 2
8*d*f^3)*x)*cos(d*x + c)^2*sin(d*x + c) + (3*d^3*f^3*x^3 + 9*d^3*e*f^2*x^2
+ 9*c*d^2*e^2*f - 9*c^2*d*e*f^2 + (3*c^3 + 28*c)*f^3 + (9*d^3*e^2*f + 28*d*
f^3)*x)*cos(d*x + c)^2)*log(I*cos(d*x + c) + sin(d*x + c) + 1) - 3*((d^3*f^
3*x^3 + 3*d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + (c^3 + 4*c)*f^3 +
 (3*d^3*e^2*f + 4*d*f^3)*x)*cos(d*x + c)^2*sin(d*x + c) + (d^3*f^3*x^3 + 3*
d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + (c^3 + 4*c)*f^3 + (3*d^3*e^
2*f + 4*d*f^3)*x)*cos(d*x + c)^2)*log(I*cos(d*x + c) - sin(d*x + c) + 1) +
((3*d^3*f^3*x^3 + 9*d^3*e*f^2*x^2 + 9*c*d^2*e^2*f - 9*c^2*d*e*f^2 + (3*c^3
+ 28*c)*f^3 + (9*d^3*e^2*f + 28*d*f^3)*x)*cos(d*x + c)^2*sin(d*x + c) + (3*
d^3*f^3*x^3 + 9*d^3*e*f^2*x^2 + 9*c*d^2*e^2*f - 9*c^2*d*e*f^2 + (3*c^3 + 28
*c)*f^3 + (9*d^3*e^2*f + 28*d*f^3)*x)*cos(d*x + c)^2)*log(-I*cos(d*x + c) +
 sin(d*x + c) + 1) - 3*((d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*
c^2*d*e*f^2 + (c^3 + 4*c)*f^3 + (3*d^3*e^2*f + 4*d*f^3)*x)*cos(d*x + c)^2*s
in(d*x + c) + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*c*d^2*e^2*f - 3*c^2*d*e*f^
2 + (c^3 + 4*c)*f^3 + (3*d^3*e^2*f + 4*d*f^3)*x)*cos(d*x + c)^2)*log(-I*cos
(d*x + c) - sin(d*x + c) + 1) + ((3*d^3*e^3 - 9*c*d^2*e^2*f + (9*c^2 + 28)*
d*e*f^2 - (3*c^3 + 28*c)*f^3)*cos(d*x + c)^2*sin(d*x + c) + (3*d^3*e^3 - 9*
c*d^2*e^2*f + (9*c^2 + 28)*d*e*f^2 - (3*c^3 + 28*c)*f^3)*cos(d*x + c)^2)*lo
g(-cos(d*x + c) + I*sin(d*x + c) + I) - 3*((d^3*e^3 - 3*c*d^2*e^2*f + (3*c^
2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3)*cos(d*x + c)^2*sin(d*x + c) + (d^3*e^3 -
3*c*d^2*e^2*f + (3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3)*cos(d*x + c)^2)*log(
-cos(d*x + c) - I*sin(d*x + c) + I) + (18*I*f^3*cos(d*x + c)^2*sin(d*x + c)
 + 18*I*f^3*cos(d*x + c)^2)*polylog(4, I*cos(d*x + c) + sin(d*x + c)) + (18
*I*f^3*cos(d*x + c)^2*sin(d*x + c) + 18*I*f^3*cos(d*x + c)^2)*polylog(4, I*
cos(d*x + c) - sin(d*x + c)) + (-18*I*f^3*cos(d*x + c)^2*sin(d*x + c) - 18*
I*f^3*cos(d*x + c)^2)*polylog(4, -I*cos(d*x + c) + sin(d*x + c)) + (-18*I*f
^3*cos(d*x + c)^2*sin(d*x + c) - 18*I*f^3*cos(d*x + c)^2)*polylog(4, -I*cos
```

```
(d*x + c) - sin(d*x + c)) - 18*((d*f^3*x + d*e*f^2)*cos(d*x + c)^2*sin(d*x
+ c) + (d*f^3*x + d*e*f^2)*cos(d*x + c)^2)*polylog(3, I*cos(d*x + c) + sin(
d*x + c)) + 18*((d*f^3*x + d*e*f^2)*cos(d*x + c)^2*sin(d*x + c) + (d*f^3*x
+ d*e*f^2)*cos(d*x + c)^2)*polylog(3, I*cos(d*x + c) - sin(d*x + c)) - 18*(
(d*f^3*x + d*e*f^2)*cos(d*x + c)^2*sin(d*x + c) + (d*f^3*x + d*e*f^2)*cos(d
*x + c)^2)*polylog(3, -I*cos(d*x + c) + sin(d*x + c)) + 18*((d*f^3*x + d*e*
f^2)*cos(d*x + c)^2*sin(d*x + c) + (d*f^3*x + d*e*f^2)*cos(d*x + c)^2)*poly
log(3, -I*cos(d*x + c) - sin(d*x + c)) + 2*(3*d^3*f^3*x^3 + 9*d^3*e*f^2*x^2
 + 9*d^3*e^2*f*x + 3*d^3*e^3 - 5*(d^2*f^3*x^2 + 2*d^2*e*f^2*x + d^2*e^2*f)*
cos(d*x + c))*sin(d*x + c))/(a*d^4*cos(d*x + c)^2*sin(d*x + c) + a*d^4*cos(
d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \sec(dx+c)^3}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sec(d*x + c)^3/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.65, size = 2161, normalized size = 3.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sec(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] 9/4*I/a/d^2*polylog(2,-I*exp(I*(d*x+c)))*e*f^2*x-9/4*I/a/d^2*polylog(2,I*ex
p(I*(d*x+c)))*e*f^2*x-3/2/a/d^3*f^3*ln(1+I*exp(I*(d*x+c)))*x-3/2/a/d^4*f^3*
ln(1+I*exp(I*(d*x+c)))*c-3/2/a/d^3*e*f^2*ln(exp(I*(d*x+c))-I)+9/8/a/d^3*ln(
1+I*exp(I*(d*x+c)))*c^2*e*f^2-9/8/a/d*ln(1+I*exp(I*(d*x+c)))*e*f^2*x^2-1/4*
I*(-4*I*f^3*exp(3*I*(d*x+c))+2*d^3*e^3*exp(3*I*(d*x+c))-2*I*f^3*exp(5*I*(d*
x+c))+3*d^3*e^3*exp(I*(d*x+c))-2*I*f^3*exp(I*(d*x+c))+2*f^3+4*d^2*e^2*f+3*d
^3*e^3*exp(5*I*(d*x+c))+4*d^2*f^3*x^2+2*f^3*exp(4*I*(d*x+c))+2*I*d^2*e*f^2*
x*exp(I*(d*x+c))-18*I*d^3*e*f^2*x^2*exp(2*I*(d*x+c))-18*I*d^3*e^2*f*x*exp(2
*I*(d*x+c))+4*f^3*exp(2*I*(d*x+c))+I*d^2*f^3*x^2*exp(I*(d*x+c))+I*d^2*e^2*f
*exp(I*(d*x+c))+9*d^3*e*f^2*x^2*exp(I*(d*x+c))+9*d^3*e^2*f*x*exp(I*(d*x+c))
+8*d^2*e*f^2*x+36*d^2*e*f^2*x*exp(4*I*(d*x+c))-6*I*d^3*f^3*x^3*exp(2*I*(d*x
+c))-8*I*d^2*f^3*x^2*exp(3*I*(d*x+c))-8*I*d^2*e^2*f*exp(3*I*(d*x+c))+6*I*d^
3*f^3*x^3*exp(4*I*(d*x+c))-16*I*d^2*e*f^2*x*exp(3*I*(d*x+c))+18*I*d^3*e*f^2
*x^2*exp(4*I*(d*x+c))+18*I*d^3*e^2*f*x*exp(4*I*(d*x+c))-18*I*d^2*e*f^2*x*ex
p(5*I*(d*x+c))+9*d^3*e*f^2*x^2*exp(5*I*(d*x+c))+22*d^2*e^2*f*exp(2*I*(d*x+c
```

```
))+22*d^2*f^3*x^2*exp(2*I*(d*x+c))+4*d*f^3*x*exp(3*I*(d*x+c))+4*d*e*f^2*exp
(3*I*(d*x+c))+6*I*d^3*e^3*exp(4*I*(d*x+c))-6*I*d^3*e^3*exp(2*I*(d*x+c))+3*d
^3*f^3*x^3*exp(5*I*(d*x+c))+2*d*f^3*x*exp(5*I*(d*x+c))+2*d*e*f^2*exp(5*I*(d
*x+c))+18*d^2*e^2*f*exp(4*I*(d*x+c))+18*d^2*f^3*x^2*exp(4*I*(d*x+c))+2*d^3*
f^3*x^3*exp(3*I*(d*x+c))-9*I*d^2*f^3*x^2*exp(5*I*(d*x+c))-9*I*d^2*e^2*f*exp
(5*I*(d*x+c))+3*d^3*f^3*x^3*exp(I*(d*x+c))+2*d*f^3*x*exp(I*(d*x+c))+2*d*e*f
^2*exp(I*(d*x+c))+9*d^3*e^2*f*x*exp(5*I*(d*x+c))+6*d^3*e*f^2*x^2*exp(3*I*(d
*x+c))+6*d^3*e^2*f*x*exp(3*I*(d*x+c))+44*d^2*e*f^2*x*exp(2*I*(d*x+c)))/(exp
(I*(d*x+c))+I)^4/d^4/(exp(I*(d*x+c))-I)^2/a+3/2/a/d^4*f^3*c*ln(exp(I*(d*x+c
))-I)-I/a/d^2*f^3*x^2-I/a/d^4*c^2*f^3+3/2*I/a/d^4*f^3*polylog(2,-I*exp(I*(d
*x+c)))-7/2*I/a/d^4*f^3*polylog(2,I*exp(I*(d*x+c)))+3/8/d/a*f^3*ln(1-I*exp(
I*(d*x+c)))*x^3-9/8/d^3/a*e*f^2*c^2*ln(1-I*exp(I*(d*x+c)))-9/8/d^2/a*e^2*f*
c*ln(exp(I*(d*x+c))+I)+9/8/d^3/a*e*f^2*c^2*ln(exp(I*(d*x+c))+I)+9/8/d/a*e^2
*f*ln(1-I*exp(I*(d*x+c)))*x+9/8/d^2/a*e^2*f*ln(1-I*exp(I*(d*x+c)))*c+3/8/d/
a*ln(exp(I*(d*x+c))+I)*e^3+9/8/d/a*e*f^2*ln(1-I*exp(I*(d*x+c)))*x^2+9/8/a/d
^2*e^2*f*c*ln(exp(I*(d*x+c))-I)-9/8/a/d*ln(1+I*exp(I*(d*x+c)))*e^2*f*x-9/8/
a/d^2*ln(1+I*exp(I*(d*x+c)))*c*e^2*f-3/8/a/d*e^3*ln(exp(I*(d*x+c))-I)+3/8/d
^4/a*f^3*c^3*ln(1-I*exp(I*(d*x+c)))+9/4/d^3/a*f^3*polylog(3,I*exp(I*(d*x+c)
))*x-3/8/d^4/a*f^3*c^3*ln(exp(I*(d*x+c))+I)+9/4/d^3/a*e*f^2*polylog(3,I*exp
(I*(d*x+c)))-9/8/a/d^3*e*f^2*c^2*ln(exp(I*(d*x+c))-I)-3/8/a/d*f^3*ln(1+I*ex
p(I*(d*x+c)))*x^3-3/8/a/d^4*f^3*ln(1+I*exp(I*(d*x+c)))*c^3-9/4/a/d^3*f^3*po
lylog(3,-I*exp(I*(d*x+c)))*x+9/4*I*f^3*polylog(4,I*exp(I*(d*x+c)))/a/d^4-9/
4*I*f^3*polylog(4,-I*exp(I*(d*x+c)))/a/d^4+9/8*I/a/d^2*e^2*f*polylog(2,-I*e
xp(I*(d*x+c)))-9/8*I/a/d^2*e^2*f*polylog(2,I*exp(I*(d*x+c)))-2*I/a/d^3*f^3*
c*x-9/8*I/a/d^2*f^3*polylog(2,I*exp(I*(d*x+c)))*x^2+9/8*I/a/d^2*f^3*polylog
(2,-I*exp(I*(d*x+c)))*x^2-2/a/d^3*e*f^2*ln(exp(I*(d*x+c)))+7/2/a/d^3*e*f^2*
ln(exp(I*(d*x+c))+I)-9/4/a/d^3*e*f^2*polylog(3,-I*exp(I*(d*x+c)))+2/a/d^4*f
^3*c*ln(exp(I*(d*x+c)))-7/2/a/d^4*f^3*c*ln(exp(I*(d*x+c))+I)+3/8/a/d^4*f^3*
c^3*ln(exp(I*(d*x+c))-I)+7/2/a/d^3*f^3*ln(1-I*exp(I*(d*x+c)))*x+7/2/a/d^4*f
^3*ln(1-I*exp(I*(d*x+c)))*c
```

maxima [B] time = 79.66, size = 10800, normalized size = 15.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/16*(3*c*e^2*f*(2*(3*sin(d*x + c)^2 + 3*sin(d*x + c) - 2)/(a*d*sin(d*x + c
)^3 + a*d*sin(d*x + c)^2 - a*d*sin(d*x + c) - a*d) - 3*log(sin(d*x + c) + 1
)/(a*d) + 3*log(sin(d*x + c) - 1)/(a*d)) - e^3*(2*(3*sin(d*x + c)^2 + 3*sin
(d*x + c) - 2)/(a*sin(d*x + c)^3 + a*sin(d*x + c)^2 - a*sin(d*x + c) - a) -
 3*log(sin(d*x + c) + 1)/a + 3*log(sin(d*x + c) - 1)/a) - 16*(16*d^2*e^2*f
- 32*c*d*e*f^2 + 8*(2*c^2 + 1)*f^3 + (2*(9*c^2 + 28)*d*e*f^2 - 2*(3*c^3 + 2
8*c)*f^3 - 2*((9*c^2 + 28)*d*e*f^2 - (3*c^3 + 28*c)*f^3)*cos(6*d*x + 6*c) -
```

```
((36*I*c^2 + 112*I)*d*e*f^2 + (-12*I*c^3 - 112*I*c)*f^3)*cos(5*d*x + 5*c)
- 2*((9*c^2 + 28)*d*e*f^2 - (3*c^3 + 28*c)*f^3)*cos(4*d*x + 4*c) - ((72*I*c
^2 + 224*I)*d*e*f^2 + (-24*I*c^3 - 224*I*c)*f^3)*cos(3*d*x + 3*c) + 2*((9*c
^2 + 28)*d*e*f^2 - (3*c^3 + 28*c)*f^3)*cos(2*d*x + 2*c) - ((36*I*c^2 + 112*
I)*d*e*f^2 + (-12*I*c^3 - 112*I*c)*f^3)*cos(d*x + c) - ((18*I*c^2 + 56*I)*d
*e*f^2 + (-6*I*c^3 - 56*I*c)*f^3)*sin(6*d*x + 6*c) + 4*((9*c^2 + 28)*d*e*f^
2 - (3*c^3 + 28*c)*f^3)*sin(5*d*x + 5*c) - ((18*I*c^2 + 56*I)*d*e*f^2 + (-6
*I*c^3 - 56*I*c)*f^3)*sin(4*d*x + 4*c) + 8*((9*c^2 + 28)*d*e*f^2 - (3*c^3 +
 28*c)*f^3)*sin(3*d*x + 3*c) - ((-18*I*c^2 - 56*I)*d*e*f^2 + (6*I*c^3 + 56*
I*c)*f^3)*sin(2*d*x + 2*c) + 4*((9*c^2 + 28)*d*e*f^2 - (3*c^3 + 28*c)*f^3)*
sin(d*x + c))*arctan2(sin(d*x + c) + 1, cos(d*x + c)) - (6*(3*c^2 + 4)*d*e*
f^2 - 6*(c^3 + 4*c)*f^3 - 6*((3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3)*cos(6*d
*x + 6*c) + ((-36*I*c^2 - 48*I)*d*e*f^2 + (12*I*c^3 + 48*I*c)*f^3)*cos(5*d*
x + 5*c) - 6*((3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3)*cos(4*d*x + 4*c) + ((-
72*I*c^2 - 96*I)*d*e*f^2 + (24*I*c^3 + 96*I*c)*f^3)*cos(3*d*x + 3*c) + 6*((
3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3)*cos(2*d*x + 2*c) + ((-36*I*c^2 - 48*I
)*d*e*f^2 + (12*I*c^3 + 48*I*c)*f^3)*cos(d*x + c) + ((-18*I*c^2 - 24*I)*d*e
*f^2 + (6*I*c^3 + 24*I*c)*f^3)*sin(6*d*x + 6*c) + 12*((3*c^2 + 4)*d*e*f^2 -
 (c^3 + 4*c)*f^3)*sin(5*d*x + 5*c) + ((-18*I*c^2 - 24*I)*d*e*f^2 + (6*I*c^3
 + 24*I*c)*f^3)*sin(4*d*x + 4*c) + 24*((3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^
3)*sin(3*d*x + 3*c) + ((18*I*c^2 + 24*I)*d*e*f^2 + (-6*I*c^3 - 24*I*c)*f^3)
*sin(2*d*x + 2*c) + 12*((3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3)*sin(d*x + c)
)*arctan2(sin(d*x + c) - 1, cos(d*x + c)) - (6*(d*x + c)^3*f^3 + 18*(d*e*f^
2 - c*f^3)*(d*x + c)^2 + 2*(9*d^2*e^2*f - 18*c*d*e*f^2 + (9*c^2 + 28)*f^3)*
(d*x + c) - 2*(3*(d*x + c)^3*f^3 + 9*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (9*d^2
*e^2*f - 18*c*d*e*f^2 + (9*c^2 + 28)*f^3)*(d*x + c))*cos(6*d*x + 6*c) + (-1
2*I*(d*x + c)^3*f^3 + (-36*I*d*e*f^2 + 36*I*c*f^3)*(d*x + c)^2 + (-36*I*d^2
*e^2*f + 72*I*c*d*e*f^2 + (-36*I*c^2 - 112*I)*f^3)*(d*x + c))*cos(5*d*x + 5
*c) - 2*(3*(d*x + c)^3*f^3 + 9*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (9*d^2*e^2*f
 - 18*c*d*e*f^2 + (9*c^2 + 28)*f^3)*(d*x + c))*cos(4*d*x + 4*c) + (-24*I*(d
*x + c)^3*f^3 + (-72*I*d*e*f^2 + 72*I*c*f^3)*(d*x + c)^2 + (-72*I*d^2*e^2*f
 + 144*I*c*d*e*f^2 + (-72*I*c^2 - 224*I)*f^3)*(d*x + c))*cos(3*d*x + 3*c) +
 2*(3*(d*x + c)^3*f^3 + 9*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (9*d^2*e^2*f - 18
*c*d*e*f^2 + (9*c^2 + 28)*f^3)*(d*x + c))*cos(2*d*x + 2*c) + (-12*I*(d*x +
c)^3*f^3 + (-36*I*d*e*f^2 + 36*I*c*f^3)*(d*x + c)^2 + (-36*I*d^2*e^2*f + 72
*I*c*d*e*f^2 + (-36*I*c^2 - 112*I)*f^3)*(d*x + c))*cos(d*x + c) + (-6*I*(d*
x + c)^3*f^3 + (-18*I*d*e*f^2 + 18*I*c*f^3)*(d*x + c)^2 + (-18*I*d^2*e^2*f
+ 36*I*c*d*e*f^2 + (-18*I*c^2 - 56*I)*f^3)*(d*x + c))*sin(6*d*x + 6*c) + 4*
(3*(d*x + c)^3*f^3 + 9*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (9*d^2*e^2*f - 18*c*
d*e*f^2 + (9*c^2 + 28)*f^3)*(d*x + c))*sin(5*d*x + 5*c) + (-6*I*(d*x + c)^3
*f^3 + (-18*I*d*e*f^2 + 18*I*c*f^3)*(d*x + c)^2 + (-18*I*d^2*e^2*f + 36*I*c
*d*e*f^2 + (-18*I*c^2 - 56*I)*f^3)*(d*x + c))*sin(4*d*x + 4*c) + 8*(3*(d*x
+ c)^3*f^3 + 9*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (9*d^2*e^2*f - 18*c*d*e*f^2
+ (9*c^2 + 28)*f^3)*(d*x + c))*sin(3*d*x + 3*c) + (6*I*(d*x + c)^3*f^3 + (1
8*I*d*e*f^2 - 18*I*c*f^3)*(d*x + c)^2 + (18*I*d^2*e^2*f - 36*I*c*d*e*f^2 +
```

(18*I*c^2 + 56*I)*f^3)*(d*x + c))*sin(2*d*x + 2*c) + 4*(3*(d*x + c)^3*f^3 +
9*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (9*d^2*e^2*f - 18*c*d*e*f^2 + (9*c^2 + 2
8)*f^3)*(d*x + c))*sin(d*x + c))*arctan2(cos(d*x + c), sin(d*x + c) + 1) -
(6*(d*x + c)^3*f^3 + 18*(d*e*f^2 - c*f^3)*(d*x + c)^2 + 6*(3*d^2*e^2*f - 6*
c*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c) - 6*((d*x + c)^3*f^3 + 3*(d*e*f^2 -
c*f^3)*(d*x + c)^2 + (3*d^2*e^2*f - 6*c*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c
))*cos(6*d*x + 6*c) + (-12*I*(d*x + c)^3*f^3 + (-36*I*d*e*f^2 + 36*I*c*f^3)
*(d*x + c)^2 + (-36*I*d^2*e^2*f + 72*I*c*d*e*f^2 + (-36*I*c^2 - 48*I)*f^3)*
(d*x + c))*cos(5*d*x + 5*c) - 6*((d*x + c)^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x
+ c)^2 + (3*d^2*e^2*f - 6*c*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c))*cos(4*d*
x + 4*c) + (-24*I*(d*x + c)^3*f^3 + (-72*I*d*e*f^2 + 72*I*c*f^3)*(d*x + c)^
2 + (-72*I*d^2*e^2*f + 144*I*c*d*e*f^2 + (-72*I*c^2 - 96*I)*f^3)*(d*x + c))
*cos(3*d*x + 3*c) + 6*((d*x + c)^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 +
(3*d^2*e^2*f - 6*c*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c))*cos(2*d*x + 2*c) +
(-12*I*(d*x + c)^3*f^3 + (-36*I*d*e*f^2 + 36*I*c*f^3)*(d*x + c)^2 + (-36*I
*d^2*e^2*f + 72*I*c*d*e*f^2 + (-36*I*c^2 - 48*I)*f^3)*(d*x + c))*cos(d*x +
c) + (-6*I*(d*x + c)^3*f^3 + (-18*I*d*e*f^2 + 18*I*c*f^3)*(d*x + c)^2 + (-1
8*I*d^2*e^2*f + 36*I*c*d*e*f^2 + (-18*I*c^2 - 24*I)*f^3)*(d*x + c))*sin(6*d
*x + 6*c) + 12*((d*x + c)^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (3*d^2*
e^2*f - 6*c*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c))*sin(5*d*x + 5*c) + (-6*I*
(d*x + c)^3*f^3 + (-18*I*d*e*f^2 + 18*I*c*f^3)*(d*x + c)^2 + (-18*I*d^2*e^2
*f + 36*I*c*d*e*f^2 + (-18*I*c^2 - 24*I)*f^3)*(d*x + c))*sin(4*d*x + 4*c) +
24*((d*x + c)^3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (3*d^2*e^2*f - 6*c
*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c))*sin(3*d*x + 3*c) + (6*I*(d*x + c)^3*
f^3 + (18*I*d*e*f^2 - 18*I*c*f^3)*(d*x + c)^2 + (18*I*d^2*e^2*f - 36*I*c*d*
e*f^2 + (18*I*c^2 + 24*I)*f^3)*(d*x + c))*sin(2*d*x + 2*c) + 12*((d*x + c)^
3*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (3*d^2*e^2*f - 6*c*d*e*f^2 + (3*c
^2 + 4)*f^3)*(d*x + c))*sin(d*x + c))*arctan2(cos(d*x + c), -sin(d*x + c) +
1) + 16*((d*x + c)^2*f^3 + 2*(d*e*f^2 - c*f^3)*(d*x + c))*cos(6*d*x + 6*c)
+ (12*(d*x + c)^3*f^3 - 36*I*d^2*e^2*f + 4*(9*c^2 + 18*I*c + 2)*d*e*f^2 -
(12*c^3 + 36*I*c^2 + 8*c + 8*I)*f^3 + (36*d*e*f^2 - (36*c + 4*I)*f^3)*(d*x
+ c)^2 + (36*d^2*e^2*f - (72*c + 8*I)*d*e*f^2 + 4*(9*c^2 + 2*I*c + 2)*f^3)*
(d*x + c))*cos(5*d*x + 5*c) - (-24*I*(d*x + c)^3*f^3 - 72*d^2*e^2*f + (-72*
I*c^2 + 144*c)*d*e*f^2 + (24*I*c^3 - 72*c^2 - 8)*f^3 - 8*(9*I*d*e*f^2 + (-9
*I*c + 11)*f^3)*(d*x + c)^2 + (-72*I*d^2*e^2*f - 16*(-9*I*c + 11)*d*e*f^2 +
(-72*I*c^2 + 176*c)*f^3)*(d*x + c))*cos(4*d*x + 4*c) + (8*(d*x + c)^3*f^3
- 32*I*d^2*e^2*f + 8*(3*c^2 + 8*I*c + 2)*d*e*f^2 - (8*c^3 + 32*I*c^2 + 16*c
+ 16*I)*f^3 + (24*d*e*f^2 - (24*c - 32*I)*f^3)*(d*x + c)^2 + (24*d^2*e^2*f
- (48*c - 64*I)*d*e*f^2 + 8*(3*c^2 - 8*I*c + 2)*f^3)*(d*x + c))*cos(3*d*x
+ 3*c) - (24*I*(d*x + c)^3*f^3 - 88*d^2*e^2*f + (72*I*c^2 + 176*c)*d*e*f^2
+ (-24*I*c^3 - 88*c^2 - 16)*f^3 + (72*I*d*e*f^2 - 72*(I*c + 1)*f^3)*(d*x +
c)^2 + (72*I*d^2*e^2*f - 144*(I*c + 1)*d*e*f^2 + (72*I*c^2 + 144*c)*f^3)*(d
*x + c))*cos(2*d*x + 2*c) + (12*(d*x + c)^3*f^3 + 4*I*d^2*e^2*f + 4*(9*c^2
- 2*I*c + 2)*d*e*f^2 - (12*c^3 - 4*I*c^2 + 8*c + 8*I)*f^3 + (36*d*e*f^2 - (
36*c - 36*I)*f^3)*(d*x + c)^2 + (36*d^2*e^2*f - (72*c - 72*I)*d*e*f^2 + 4*(

9*c^2 - 18*I*c + 2)*f^3)*(d*x + c))*cos(d*x + c) - (18*d^2*e^2*f - 36*c*d*e
f^2 + 18(d*x + c)^2*f^3 + 2*(9*c^2 + 28)*f^3 + 36*(d*e*f^2 - c*f^3)*(d*x
+ c) - 2*(9*d^2*e^2*f - 18*c*d*e*f^2 + 9*(d*x + c)^2*f^3 + (9*c^2 + 28)*f^3
 + 18*(d*e*f^2 - c*f^3)*(d*x + c))*cos(6*d*x + 6*c) + (-36*I*d^2*e^2*f + 72
*I*c*d*e*f^2 - 36*I*(d*x + c)^2*f^3 + (-36*I*c^2 - 112*I)*f^3 + (-72*I*d*e*
f^2 + 72*I*c*f^3)*(d*x + c))*cos(5*d*x + 5*c) - 2*(9*d^2*e^2*f - 18*c*d*e*f
^2 + 9*(d*x + c)^2*f^3 + (9*c^2 + 28)*f^3 + 18*(d*e*f^2 - c*f^3)*(d*x + c))
*cos(4*d*x + 4*c) + (-72*I*d^2*e^2*f + 144*I*c*d*e*f^2 - 72*I*(d*x + c)^2*f
^3 + (-72*I*c^2 - 224*I)*f^3 + (-144*I*d*e*f^2 + 144*I*c*f^3)*(d*x + c))*co
s(3*d*x + 3*c) + 2*(9*d^2*e^2*f - 18*c*d*e*f^2 + 9*(d*x + c)^2*f^3 + (9*c^2
 + 28)*f^3 + 18*(d*e*f^2 - c*f^3)*(d*x + c))*cos(2*d*x + 2*c) + (-36*I*d^2*
e^2*f + 72*I*c*d*e*f^2 - 36*I*(d*x + c)^2*f^3 + (-36*I*c^2 - 112*I)*f^3 + (
-72*I*d*e*f^2 + 72*I*c*f^3)*(d*x + c))*cos(d*x + c) + (-18*I*d^2*e^2*f + 36
*I*c*d*e*f^2 - 18*I*(d*x + c)^2*f^3 + (-18*I*c^2 - 56*I)*f^3 + (-36*I*d*e*f
^2 + 36*I*c*f^3)*(d*x + c))*sin(6*d*x + 6*c) + 4*(9*d^2*e^2*f - 18*c*d*e*f^
2 + 9*(d*x + c)^2*f^3 + (9*c^2 + 28)*f^3 + 18*(d*e*f^2 - c*f^3)*(d*x + c))*
sin(5*d*x + 5*c) + (-18*I*d^2*e^2*f + 36*I*c*d*e*f^2 - 18*I*(d*x + c)^2*f^3
 + (-18*I*c^2 - 56*I)*f^3 + (-36*I*d*e*f^2 + 36*I*c*f^3)*(d*x + c))*sin(4*d
*x + 4*c) + 8*(9*d^2*e^2*f - 18*c*d*e*f^2 + 9*(d*x + c)^2*f^3 + (9*c^2 + 28
)*f^3 + 18*(d*e*f^2 - c*f^3)*(d*x + c))*sin(3*d*x + 3*c) + (18*I*d^2*e^2*f
 - 36*I*c*d*e*f^2 + 18*I*(d*x + c)^2*f^3 + (18*I*c^2 + 56*I)*f^3 + (36*I*d*e
*f^2 - 36*I*c*f^3)*(d*x + c))*sin(2*d*x + 2*c) + 4*(9*d^2*e^2*f - 18*c*d*e*
f^2 + 9*(d*x + c)^2*f^3 + (9*c^2 + 28)*f^3 + 18*(d*e*f^2 - c*f^3)*(d*x + c)
)*sin(d*x + c))*dilog(I*e^(I*d*x + I*c)) + (18*d^2*e^2*f - 36*c*d*e*f^2 + 1
8*(d*x + c)^2*f^3 + 6*(3*c^2 + 4)*f^3 + 36*(d*e*f^2 - c*f^3)*(d*x + c) - 6*
(3*d^2*e^2*f - 6*c*d*e*f^2 + 3*(d*x + c)^2*f^3 + (3*c^2 + 4)*f^3 + 6*(d*e*f
^2 - c*f^3)*(d*x + c))*cos(6*d*x + 6*c) - (36*I*d^2*e^2*f - 72*I*c*d*e*f^2
 + 36*I*(d*x + c)^2*f^3 + (36*I*c^2 + 48*I)*f^3 + (72*I*d*e*f^2 - 72*I*c*f^3
)*(d*x + c))*cos(5*d*x + 5*c) - 6*(3*d^2*e^2*f - 6*c*d*e*f^2 + 3*(d*x + c)^
2*f^3 + (3*c^2 + 4)*f^3 + 6*(d*e*f^2 - c*f^3)*(d*x + c))*cos(4*d*x + 4*c) -
 (72*I*d^2*e^2*f - 144*I*c*d*e*f^2 + 72*I*(d*x + c)^2*f^3 + (72*I*c^2 + 96*
I)*f^3 + (144*I*d*e*f^2 - 144*I*c*f^3)*(d*x + c))*cos(3*d*x + 3*c) + 6*(3*d
^2*e^2*f - 6*c*d*e*f^2 + 3*(d*x + c)^2*f^3 + (3*c^2 + 4)*f^3 + 6*(d*e*f^2 -
 c*f^3)*(d*x + c))*cos(2*d*x + 2*c) - (36*I*d^2*e^2*f - 72*I*c*d*e*f^2 + 36
I(d*x + c)^2*f^3 + (36*I*c^2 + 48*I)*f^3 + (72*I*d*e*f^2 - 72*I*c*f^3)*(d
*x + c))*cos(d*x + c) - (18*I*d^2*e^2*f - 36*I*c*d*e*f^2 + 18*I*(d*x + c)^2
*f^3 + (18*I*c^2 + 24*I)*f^3 + (36*I*d*e*f^2 - 36*I*c*f^3)*(d*x + c))*sin(6
*d*x + 6*c) + 12*(3*d^2*e^2*f - 6*c*d*e*f^2 + 3*(d*x + c)^2*f^3 + (3*c^2 +
4)*f^3 + 6*(d*e*f^2 - c*f^3)*(d*x + c))*sin(5*d*x + 5*c) - (18*I*d^2*e^2*f
 - 36*I*c*d*e*f^2 + 18*I*(d*x + c)^2*f^3 + (18*I*c^2 + 24*I)*f^3 + (36*I*d*e
*f^2 - 36*I*c*f^3)*(d*x + c))*sin(4*d*x + 4*c) + 24*(3*d^2*e^2*f - 6*c*d*e*
f^2 + 3*(d*x + c)^2*f^3 + (3*c^2 + 4)*f^3 + 6*(d*e*f^2 - c*f^3)*(d*x + c))*
sin(3*d*x + 3*c) - (-18*I*d^2*e^2*f + 36*I*c*d*e*f^2 - 18*I*(d*x + c)^2*f^3
 + (-18*I*c^2 - 24*I)*f^3 + (-36*I*d*e*f^2 + 36*I*c*f^3)*(d*x + c))*sin(2*d
*x + 2*c) + 12*(3*d^2*e^2*f - 6*c*d*e*f^2 + 3*(d*x + c)^2*f^3 + (3*c^2 + 4)

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*f^3 + 6*(d*e*f^2 - c*f^3)*(d*x + c))*sin(d*x + c))*dilog(-I*e^(I*d*x + I*c
)) - (3*I*(d*x + c)^3*f^3 + (9*I*c^2 + 28*I)*d*e*f^2 + (-3*I*c^3 - 28*I*c)*
f^3 + (9*I*d*e*f^2 - 9*I*c*f^3)*(d*x + c)^2 + (9*I*d^2*e^2*f - 18*I*c*d*e*f
^2 + (9*I*c^2 + 28*I)*f^3)*(d*x + c) + (-3*I*(d*x + c)^3*f^3 + (-9*I*c^2 -
28*I)*d*e*f^2 + (3*I*c^3 + 28*I*c)*f^3 + (-9*I*d*e*f^2 + 9*I*c*f^3)*(d*x +
c)^2 + (-9*I*d^2*e^2*f + 18*I*c*d*e*f^2 + (-9*I*c^2 - 28*I)*f^3)*(d*x + c))
*cos(6*d*x + 6*c) + 2*(3*(d*x + c)^3*f^3 + (9*c^2 + 28)*d*e*f^2 - (3*c^3 +
28*c)*f^3 + 9*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (9*d^2*e^2*f - 18*c*d*e*f^2 +
 (9*c^2 + 28)*f^3)*(d*x + c))*cos(5*d*x + 5*c) + (-3*I*(d*x + c)^3*f^3 + (-
9*I*c^2 - 28*I)*d*e*f^2 + (3*I*c^3 + 28*I*c)*f^3 + (-9*I*d*e*f^2 + 9*I*c*f^
3)*(d*x + c)^2 + (-9*I*d^2*e^2*f + 18*I*c*d*e*f^2 + (-9*I*c^2 - 28*I)*f^3)*
(d*x + c))*cos(4*d*x + 4*c) + 4*(3*(d*x + c)^3*f^3 + (9*c^2 + 28)*d*e*f^2 -
 (3*c^3 + 28*c)*f^3 + 9*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (9*d^2*e^2*f - 18*c
*d*e*f^2 + (9*c^2 + 28)*f^3)*(d*x + c))*cos(3*d*x + 3*c) + (3*I*(d*x + c)^3
*f^3 + (9*I*c^2 + 28*I)*d*e*f^2 + (-3*I*c^3 - 28*I*c)*f^3 + (9*I*d*e*f^2 -
9*I*c*f^3)*(d*x + c)^2 + (9*I*d^2*e^2*f - 18*I*c*d*e*f^2 + (9*I*c^2 + 28*I)
*f^3)*(d*x + c))*cos(2*d*x + 2*c) + 2*(3*(d*x + c)^3*f^3 + (9*c^2 + 28)*d*e
*f^2 - (3*c^3 + 28*c)*f^3 + 9*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (9*d^2*e^2*f
- 18*c*d*e*f^2 + (9*c^2 + 28)*f^3)*(d*x + c))*cos(d*x + c) + (3*(d*x + c)^3
*f^3 + (9*c^2 + 28)*d*e*f^2 - (3*c^3 + 28*c)*f^3 + 9*(d*e*f^2 - c*f^3)*(d*x
 + c)^2 + (9*d^2*e^2*f - 18*c*d*e*f^2 + (9*c^2 + 28)*f^3)*(d*x + c))*sin(6*
d*x + 6*c) + (6*I*(d*x + c)^3*f^3 + (18*I*c^2 + 56*I)*d*e*f^2 + (-6*I*c^3 -
 56*I*c)*f^3 + (18*I*d*e*f^2 - 18*I*c*f^3)*(d*x + c)^2 + (18*I*d^2*e^2*f -
36*I*c*d*e*f^2 + (18*I*c^2 + 56*I)*f^3)*(d*x + c))*sin(5*d*x + 5*c) + (3*(d
*x + c)^3*f^3 + (9*c^2 + 28)*d*e*f^2 - (3*c^3 + 28*c)*f^3 + 9*(d*e*f^2 - c*
f^3)*(d*x + c)^2 + (9*d^2*e^2*f - 18*c*d*e*f^2 + (9*c^2 + 28)*f^3)*(d*x + c
))*sin(4*d*x + 4*c) + (12*I*(d*x + c)^3*f^3 + (36*I*c^2 + 112*I)*d*e*f^2 +
(-12*I*c^3 - 112*I*c)*f^3 + (36*I*d*e*f^2 - 36*I*c*f^3)*(d*x + c)^2 + (36*I
*d^2*e^2*f - 72*I*c*d*e*f^2 + (36*I*c^2 + 112*I)*f^3)*(d*x + c))*sin(3*d*x
+ 3*c) - (3*(d*x + c)^3*f^3 + (9*c^2 + 28)*d*e*f^2 - (3*c^3 + 28*c)*f^3 + 9
*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (9*d^2*e^2*f - 18*c*d*e*f^2 + (9*c^2 + 28)
*f^3)*(d*x + c))*sin(2*d*x + 2*c) + (6*I*(d*x + c)^3*f^3 + (18*I*c^2 + 56*I
)*d*e*f^2 + (-6*I*c^3 - 56*I*c)*f^3 + (18*I*d*e*f^2 - 18*I*c*f^3)*(d*x + c)
^2 + (18*I*d^2*e^2*f - 36*I*c*d*e*f^2 + (18*I*c^2 + 56*I)*f^3)*(d*x + c))*s
in(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) - (-
3*I*(d*x + c)^3*f^3 + (-9*I*c^2 - 12*I)*d*e*f^2 + (3*I*c^3 + 12*I*c)*f^3 +
(-9*I*d*e*f^2 + 9*I*c*f^3)*(d*x + c)^2 + (-9*I*d^2*e^2*f + 18*I*c*d*e*f^2 +
 (-9*I*c^2 - 12*I)*f^3)*(d*x + c) + (3*I*(d*x + c)^3*f^3 + (9*I*c^2 + 12*I)
*d*e*f^2 + (-3*I*c^3 - 12*I*c)*f^3 + (9*I*d*e*f^2 - 9*I*c*f^3)*(d*x + c)^2
+ (9*I*d^2*e^2*f - 18*I*c*d*e*f^2 + (9*I*c^2 + 12*I)*f^3)*(d*x + c))*cos(6*
d*x + 6*c) - 6*((d*x + c)^3*f^3 + (3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3 + 3
*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (3*d^2*e^2*f - 6*c*d*e*f^2 + (3*c^2 + 4)*f
^3)*(d*x + c))*cos(5*d*x + 5*c) + (3*I*(d*x + c)^3*f^3 + (9*I*c^2 + 12*I)*d
*e*f^2 + (-3*I*c^3 - 12*I*c)*f^3 + (9*I*d*e*f^2 - 9*I*c*f^3)*(d*x + c)^2 +
(9*I*d^2*e^2*f - 18*I*c*d*e*f^2 + (9*I*c^2 + 12*I)*f^3)*(d*x + c))*cos(4*d*
```

x + 4*c) - 12*((d*x + c)^3*f^3 + (3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (3*d^2*e^2*f - 6*c*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c))*cos(3*d*x + 3*c) + (-3*I*(d*x + c)^3*f^3 + (-9*I*c^2 - 12*I)*d*e*f^2 + (3*I*c^3 + 12*I*c)*f^3 + (-9*I*d*e*f^2 + 9*I*c*f^3)*(d*x + c)^2 + (-9*I*d^2*e^2*f + 18*I*c*d*e*f^2 + (-9*I*c^2 - 12*I)*f^3)*(d*x + c))*cos(2*d*x + 2*c) - 6*((d*x + c)^3*f^3 + (3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (3*d^2*e^2*f - 6*c*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c))*cos(d*x + c) - 3*((d*x + c)^3*f^3 + (3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (3*d^2*e^2*f - 6*c*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c))*sin(6*d*x + 6*c) + (-6*I*(d*x + c)^3*f^3 + (-18*I*c^2 - 24*I)*d*e*f^2 + (6*I*c^3 + 24*I*c)*f^3 + (-18*I*d*e*f^2 + 18*I*c*f^3)*(d*x + c)^2 + (-18*I*d^2*e^2*f + 36*I*c*d*e*f^2 + (-18*I*c^2 - 24*I)*f^3)*(d*x + c))*sin(5*d*x + 5*c) - 3*((d*x + c)^3*f^3 + (3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (3*d^2*e^2*f - 6*c*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c))*sin(4*d*x + 4*c) + (-12*I*(d*x + c)^3*f^3 + (-36*I*c^2 - 48*I)*d*e*f^2 + (12*I*c^3 + 48*I*c)*f^3 + (-36*I*d*e*f^2 + 36*I*c*f^3)*(d*x + c)^2 + (-36*I*d^2*e^2*f + 72*I*c*d*e*f^2 + (-36*I*c^2 - 48*I)*f^3)*(d*x + c))*sin(3*d*x + 3*c) + 3*((d*x + c)^3*f^3 + (3*c^2 + 4)*d*e*f^2 - (c^3 + 4*c)*f^3 + 3*(d*e*f^2 - c*f^3)*(d*x + c)^2 + (3*d^2*e^2*f - 6*c*d*e*f^2 + (3*c^2 + 4)*f^3)*(d*x + c))*sin(2*d*x + 2*c) + (-6*I*(d*x + c)^3*f^3 + (-18*I*c^2 - 24*I)*d*e*f^2 + (6*I*c^3 + 24*I*c)*f^3 + (-18*I*d*e*f^2 + 18*I*c*f^3)*(d*x + c)^2 + (-18*I*d^2*e^2*f + 36*I*c*d*e*f^2 + (-18*I*c^2 - 24*I)*f^3)*(d*x + c))*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*sin(d*x + c) + 1) - (36*f^3*cos(6*d*x + 6*c) + 72*I*f^3*cos(5*d*x + 5*c) + 36*f^3*cos(4*d*x + 4*c) + 144*I*f^3*cos(3*d*x + 3*c) - 36*f^3*cos(2*d*x + 2*c) + 72*I*f^3*cos(d*x + c) + 36*I*f^3*sin(6*d*x + 6*c) - 72*f^3*sin(5*d*x + 5*c) + 36*I*f^3*sin(4*d*x + 4*c) - 144*f^3*sin(3*d*x + 3*c) - 36*I*f^3*sin(2*d*x + 2*c) - 72*f^3*sin(d*x + c) - 36*f^3)*polylog(4, I*e^(I*d*x + I*c)) + (36*f^3*cos(6*d*x + 6*c) + 72*I*f^3*cos(5*d*x + 5*c) + 36*f^3*cos(4*d*x + 4*c) + 144*I*f^3*cos(3*d*x + 3*c) - 36*f^3*cos(2*d*x + 2*c) + 72*I*f^3*cos(d*x + c) + 36*I*f^3*sin(6*d*x + 6*c) - 72*f^3*sin(5*d*x + 5*c) + 36*I*f^3*sin(4*d*x + 4*c) - 144*f^3*sin(3*d*x + 3*c) - 36*I*f^3*sin(2*d*x + 2*c) - 72*f^3*sin(d*x + c) - 36*f^3)*polylog(4, -I*e^(I*d*x + I*c)) - (36*I*d*e*f^2 + 36*I*(d*x + c)*f^3 - 36*I*c*f^3 + (-36*I*d*e*f^2 - 36*I*(d*x + c)*f^3 + 36*I*c*f^3)*cos(6*d*x + 6*c) + 72*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(5*d*x + 5*c) + (-36*I*d*e*f^2 - 36*I*(d*x + c)*f^3 + 36*I*c*f^3)*cos(4*d*x + 4*c) + 144*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(3*d*x + 3*c) + (36*I*d*e*f^2 + 36*I*(d*x + c)*f^3 - 36*I*c*f^3)*cos(2*d*x + 2*c) + 72*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(d*x + c) + 36*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(6*d*x + 6*c) + (72*I*d*e*f^2 + 72*I*(d*x + c)*f^3 - 72*I*c*f^3)*sin(5*d*x + 5*c) + 36*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(4*d*x + 4*c) + (144*I*d*e*f^2 + 144*I*(d*x + c)*f^3 - 144*I*c*f^3)*sin(3*d*x + 3*c) - 36*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(2*d*x + 2*c) + (72*I*d*e*f^2 + 72*I*(d*x + c)*f^3 - 72*I*c*f^3)*sin(d*x + c))*polylog(3, I*e^(I*d*x + I*c)) - (-36*I*d*e*f^2 - 36*I*(d*x + c)*f^3 + 36*I*c*f^3 + (36*I*d*e*f^2 + 36*I*(d

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*x + c)*f^3 - 36*I*c*f^3)*cos(6*d*x + 6*c) - 72*(d*e*f^2 + (d*x + c)*f^3 -
c*f^3)*cos(5*d*x + 5*c) + (36*I*d*e*f^2 + 36*I*(d*x + c)*f^3 - 36*I*c*f^3)*
cos(4*d*x + 4*c) - 144*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(3*d*x + 3*c) +
 (-36*I*d*e*f^2 - 36*I*(d*x + c)*f^3 + 36*I*c*f^3)*cos(2*d*x + 2*c) - 72*(d
*e*f^2 + (d*x + c)*f^3 - c*f^3)*cos(d*x + c) - 36*(d*e*f^2 + (d*x + c)*f^3
- c*f^3)*sin(6*d*x + 6*c) + (-72*I*d*e*f^2 - 72*I*(d*x + c)*f^3 + 72*I*c*f^
3)*sin(5*d*x + 5*c) - 36*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(4*d*x + 4*c)
 + (-144*I*d*e*f^2 - 144*I*(d*x + c)*f^3 + 144*I*c*f^3)*sin(3*d*x + 3*c) +
36*(d*e*f^2 + (d*x + c)*f^3 - c*f^3)*sin(2*d*x + 2*c) + (-72*I*d*e*f^2 - 72
*I*(d*x + c)*f^3 + 72*I*c*f^3)*sin(d*x + c))*polylog(3, -I*e^(I*d*x + I*c))
 - (-16*I*(d*x + c)^2*f^3 + (-32*I*d*e*f^2 + 32*I*c*f^3)*(d*x + c))*sin(6*d
*x + 6*c) - (-12*I*(d*x + c)^3*f^3 - 36*d^2*e^2*f + (-36*I*c^2 + 72*c - 8*I
)*d*e*f^2 + (12*I*c^3 - 36*c^2 + 8*I*c - 8)*f^3 - 4*(9*I*d*e*f^2 + (-9*I*c
+ 1)*f^3)*(d*x + c)^2 + (-36*I*d^2*e^2*f - 8*(-9*I*c + 1)*d*e*f^2 + (-36*I*
c^2 + 8*c - 8*I)*f^3)*(d*x + c))*sin(5*d*x + 5*c) - (24*(d*x + c)^3*f^3 - 7
2*I*d^2*e^2*f + 72*(c^2 + 2*I*c)*d*e*f^2 - (24*c^3 + 72*I*c^2 + 8*I)*f^3 +
(72*d*e*f^2 - (72*c + 88*I)*f^3)*(d*x + c)^2 + (72*d^2*e^2*f - (144*c + 176
*I)*d*e*f^2 + 8*(9*c^2 + 22*I*c)*f^3)*(d*x + c))*sin(4*d*x + 4*c) - (-8*I*(
d*x + c)^3*f^3 - 32*d^2*e^2*f + (-24*I*c^2 + 64*c - 16*I)*d*e*f^2 + (8*I*c^
3 - 32*c^2 + 16*I*c - 16)*f^3 - 8*(3*I*d*e*f^2 + (-3*I*c - 4)*f^3)*(d*x + c
)^2 + (-24*I*d^2*e^2*f - 16*(-3*I*c - 4)*d*e*f^2 + (-24*I*c^2 - 64*c - 16*I
)*f^3)*(d*x + c))*sin(3*d*x + 3*c) + (24*(d*x + c)^3*f^3 + 88*I*d^2*e^2*f +
 8*(9*c^2 - 22*I*c)*d*e*f^2 - (24*c^3 - 88*I*c^2 - 16*I)*f^3 + (72*d*e*f^2
- (72*c - 72*I)*f^3)*(d*x + c)^2 + (72*d^2*e^2*f - (144*c - 144*I)*d*e*f^2
+ 72*(c^2 - 2*I*c)*f^3)*(d*x + c))*sin(2*d*x + 2*c) - (-12*I*(d*x + c)^3*f^
3 + 4*d^2*e^2*f + (-36*I*c^2 - 8*c - 8*I)*d*e*f^2 + (12*I*c^3 + 4*c^2 + 8*I
*c - 8)*f^3 + (-36*I*d*e*f^2 - 36*(-I*c - 1)*f^3)*(d*x + c)^2 + (-36*I*d^2*
e^2*f - 72*(-I*c - 1)*d*e*f^2 + (-36*I*c^2 - 72*c - 8*I)*f^3)*(d*x + c))*si
n(d*x + c))/(-16*I*a*d^3*cos(6*d*x + 6*c) + 32*a*d^3*cos(5*d*x + 5*c) - 16*
I*a*d^3*cos(4*d*x + 4*c) + 64*a*d^3*cos(3*d*x + 3*c) + 16*I*a*d^3*cos(2*d*x
 + 2*c) + 32*a*d^3*cos(d*x + c) + 16*a*d^3*sin(6*d*x + 6*c) + 32*I*a*d^3*si
n(5*d*x + 5*c) + 16*a*d^3*sin(4*d*x + 4*c) + 64*I*a*d^3*sin(3*d*x + 3*c) -
16*a*d^3*sin(2*d*x + 2*c) + 32*I*a*d^3*sin(d*x + c) + 16*I*a*d^3))/d
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cos(c + d*x)^3*(a + a*sin(c + d*x))),x)
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^3\sec^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{f^3x^3\sec^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{3ef^2x^2\sec^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{3e^2fx\sec^3(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sec(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**3*sec(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(f**3*x**3*
sec(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(3*e*f**2*x**2*sec(c + d*x
)**3/(sin(c + d*x) + 1), x) + Integral(3*e**2*f*x*sec(c + d*x)**3/(sin(c +
d*x) + 1), x))/a
```

3.282 $\int \frac{(e+fx)^2 \sec^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=431

$$-\frac{3f^2\text{Li}_3\left(-ie^{i(c+dx)}\right)}{4ad^3}+\frac{3f^2\text{Li}_3\left(ie^{i(c+dx)}\right)}{4ad^3}-\frac{f^2\sec^2(c+dx)}{12ad^3}+\frac{5f^2\tanh^{-1}(\sin(c+dx))}{6ad^3}+\frac{f^2\log(\cos(c+dx))}{3ad^3}+\frac{f^2\tan(}{}$$

```
[Out] -3/4*I*f*(f*x+e)*polylog(2,I*exp(I*(d*x+c)))/a/d^2+5/6*f^2*arctanh(sin(d*x+
c))/a/d^3+1/3*f^2*ln(cos(d*x+c))/a/d^3+3/4*I*f*(f*x+e)*polylog(2,-I*exp(I*(
d*x+c)))/a/d^2-3/4*I*(f*x+e)^2*arctan(exp(I*(d*x+c)))/a/d-3/4*f^2*polylog(3
,-I*exp(I*(d*x+c)))/a/d^3+3/4*f^2*polylog(3,I*exp(I*(d*x+c)))/a/d^3-3/4*f*(
f*x+e)*sec(d*x+c)/a/d^2-1/12*f^2*sec(d*x+c)^2/a/d^3-1/6*f*(f*x+e)*sec(d*x+c
)^3/a/d^2-1/4*(f*x+e)^2*sec(d*x+c)^4/a/d+1/3*f*(f*x+e)*tan(d*x+c)/a/d^2+1/1
2*f^2*sec(d*x+c)*tan(d*x+c)/a/d^3+3/8*(f*x+e)^2*sec(d*x+c)*tan(d*x+c)/a/d+1
/6*f*(f*x+e)*sec(d*x+c)^2*tan(d*x+c)/a/d^2+1/4*(f*x+e)^2*sec(d*x+c)^3*tan(d
*x+c)/a/d
```

Rubi [A] time = 0.40, antiderivative size = 431, normalized size of antiderivative = 1.00, number of steps used = 17, number of rules used = 12, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {4531, 4186, 3768, 3770, 4181, 2531, 2282, 6589, 4409, 4185, 4184, 3475}

$$\frac{3if(e+fx)\text{PolyLog}\left(2,-ie^{i(c+dx)}\right)}{4ad^2}-\frac{3if(e+fx)\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{4ad^2}-\frac{3f^2\text{PolyLog}\left(3,-ie^{i(c+dx)}\right)}{4ad^3}+\frac{3f^2\text{PolyLog}\left(\right.}{4ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sec[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (((-3*I)/4)*(e + f*x)^2*ArcTan[E^(I*(c + d*x))])/(a*d) + (5*f^2*ArcTanh[Sin
[c + d*x]])/(6*a*d^3) + (f^2*Log[Cos[c + d*x]])/(3*a*d^3) + (((3*I)/4)*f*(e
 + f*x)*PolyLog[2, (-I)*E^(I*(c + d*x))])/(a*d^2) - (((3*I)/4)*f*(e + f*x)*
PolyLog[2, I*E^(I*(c + d*x))])/(a*d^2) - (3*f^2*PolyLog[3, (-I)*E^(I*(c + d
*x))])/(4*a*d^3) + (3*f^2*PolyLog[3, I*E^(I*(c + d*x))])/(4*a*d^3) - (3*f*(
e + f*x)*Sec[c + d*x])/(4*a*d^2) - (f^2*Sec[c + d*x]^2)/(12*a*d^3) - (f*(e
+ f*x)*Sec[c + d*x]^3)/(6*a*d^2) - ((e + f*x)^2*Sec[c + d*x]^4)/(4*a*d) + (
f*(e + f*x)*Tan[c + d*x])/(3*a*d^2) + (f^2*Sec[c + d*x]*Tan[c + d*x])/(12*a
*d^3) + (3*(e + f*x)^2*Sec[c + d*x]*Tan[c + d*x])/(8*a*d) + (f*(e + f*x)*Se
c[c + d*x]^2*Tan[c + d*x])/(6*a*d^2) + ((e + f*x)^2*Sec[c + d*x]^3*Tan[c +
d*x])/(4*a*d)
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
```

```
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3768

```
Int[(csc[(c_.) + (d_.)*(x_)]*(b_.))^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Csc[c + d*x])^(n - 1))/(d*(n - 1)), x] + Dist[(b^2*(n - 2))/(n - 1), I
nt[(b*Csc[c + d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] &&
IntegerQ[2*n]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4186

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_))^(m_), x_Symbo
l] :> -Simp[(b^2*(c + d*x)^m*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n -
 1)), x] + (Dist[(b^2*d^2*m*(m - 1))/(f^2*(n - 1)*(n - 2)), Int[(c + d*x)^(
m - 2)*(b*Csc[e + f*x])^(n - 2), x], x] + Dist[(b^2*(n - 2))/(n - 1), Int[(
c + d*x)^m*(b*Csc[e + f*x])^(n - 2), x], x] - Simp[(b^2*d*m*(c + d*x)^(m -
1)*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /; FreeQ[{b, c, d,
e, f}, x] && GtQ[n, 1] && NeQ[n, 2] && GtQ[m, 1]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4531

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sec[c +
d*x]^(n + 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Sec[c + d*x]^(n + 1)*Tan[c
 + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && EqQ[a^2
 - b^2, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\sec^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\sec^5(c+dx)\,dx}{a} - \frac{\int (e+fx)^2\sec^4(c+dx)\tan(c+dx)\,dx}{a}$$

$$= -\frac{f(e+fx)\sec^3(c+dx)}{6ad^2} - \frac{(e+fx)^2\sec^4(c+dx)}{4ad} + \frac{(e+fx)^2\sec^3(c+dx)\tan(c}{4ad}$$

$$= -\frac{3f(e+fx)\sec(c+dx)}{4ad^2} - \frac{f^2\sec^2(c+dx)}{12ad^3} - \frac{f(e+fx)\sec^3(c+dx)}{6ad^2} - \frac{(e+fx)^2}{}$$

$$= -\frac{3i(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} + \frac{5f^2\tanh^{-1}(\sin(c+dx))}{6ad^3} - \frac{3f(e+fx)\sec(c+dx}{4ad^2}$$

$$= -\frac{3i(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} + \frac{5f^2\tanh^{-1}(\sin(c+dx))}{6ad^3} + \frac{f^2\log(\cos(c+dx))}{3ad^3} +$$

$$= -\frac{3i(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} + \frac{5f^2\tanh^{-1}(\sin(c+dx))}{6ad^3} + \frac{f^2\log(\cos(c+dx))}{3ad^3} +$$

$$= -\frac{3i(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} + \frac{5f^2\tanh^{-1}(\sin(c+dx))}{6ad^3} + \frac{f^2\log(\cos(c+dx))}{3ad^3} +$$

Mathematica [B] time = 9.02, size = 1468, normalized size = 3.41

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sec[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] -1/8*((Cos[c] + I*Sin[c])*(3*d^2*e*f*x^2*Cos[c] + 6*e*f*PolyLog[2, I*Cos[c
+ d*x] + Sin[c + d*x]]*(Cos[c] - I*(-1 + Sin[c])) + (3*d^2*e^2 + 4*f^2)*x*(
Cos[c] - I*Sin[c]) + d^2*f^2*x^3*(Cos[c] - I*Sin[c]) + 6*d*e*f*x*Log[1 - I*
Cos[c + d*x] - Sin[c + d*x]]*(Cos[c] + I*(-1 + Sin[c]))*(Cos[c] - I*Sin[c])
 + 3*d*f^2*x^2*Log[1 - I*Cos[c + d*x] - Sin[c + d*x]]*(Cos[c] + I*(-1 + Sin
[c]))*(Cos[c] - I*Sin[c]) + (6*f^2*(I*d*x*PolyLog[2, I*Cos[c + d*x] + Sin[c
 + d*x]] + PolyLog[3, I*Cos[c + d*x] + Sin[c + d*x]])*(Cos[c] + I*(-1 + Sin
[c]))*(Cos[c] - I*Sin[c]))/d - (3*I)*d^2*e*f*x^2*Sin[c] + ((3*d^2*e^2 + 4*f
^2)*(d*x + I*Log[-Cos[c + d*x] - I*(-1 + Sin[c + d*x])])*(Cos[c] - I*Sin[c]
)*(-1 - I*Cos[c] + Sin[c]))/d))/(a*d^2*(Cos[c] + I*(-1 + Sin[c]))) - ((Cos[
c] + I*Sin[c])*(9*d^2*e*f*x^2*Cos[c] + 3*d^2*f^2*x^3*Cos[c] + (9*d^2*e^2 +
28*f^2)*x*(Cos[c] - I*Sin[c]) - (9*I)*d^2*e*f*x^2*Sin[c] - (3*I)*d^2*f^2*x^
3*Sin[c] + (18*f^2*(d*x*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*x]] - I*Po
lyLog[3, (-I)*Cos[c + d*x] - Sin[c + d*x]])*(Cos[c] - I*Sin[c])*(1 - I*Cos[
c] + Sin[c]))/d + 18*e*f*PolyLog[2, (-I)*Cos[c + d*x] - Sin[c + d*x]]*(Cos[
c] - I*(1 + Sin[c])) - 18*d*e*f*x*Log[1 + I*Cos[c + d*x] + Sin[c + d*x]]*(C
```

```
os[c] - I*Sin[c])*(Cos[c] + I*(1 + Sin[c])) - 9*d*f^2*x^2*Log[1 + I*Cos[c +
 d*x] + Sin[c + d*x]]*(Cos[c] - I*Sin[c])*(Cos[c] + I*(1 + Sin[c])) + ((9*d
^2*e^2 + 28*f^2)*(d*x + I*Log[Cos[c + d*x] + I*(1 + Sin[c + d*x])])*(I*Cos[
c] + Sin[c])*(Cos[c] + I*(1 + Sin[c])))/d))/(24*a*d^2*(Cos[c] + I*(1 + Sin[
c]))) + ((3*e^2*x*Cos[c])/(4*a) + (((3*I)/4)*e^2*x*Sin[c])/a)/(1 + Cos[2*c]
 + I*Sin[2*c]) + ((3*e*f*x^2*Cos[c])/(4*a) + (((3*I)/4)*e*f*x^2*Sin[c])/a)/
(1 + Cos[2*c] + I*Sin[2*c]) + ((f^2*x^3*Cos[c])/(4*a) + ((I/4)*f^2*x^3*Sin[
c])/a)/(1 + Cos[2*c] + I*Sin[2*c]) + (e^2 + 2*e*f*x + f^2*x^2)/(8*a*d*(Cos[
c/2 + (d*x)/2] - Sin[c/2 + (d*x)/2])^2) + (-(e*f*Sin[(d*x)/2]) - f^2*x*Sin[
(d*x)/2])/(2*a*d^2*(Cos[c/2] - Sin[c/2])*(Cos[c/2 + (d*x)/2] - Sin[c/2 + (d
*x)/2])) + (-e^2 - 2*e*f*x - f^2*x^2)/(8*a*d*(Cos[c/2 + (d*x)/2] + Sin[c/2
+ (d*x)/2])^4) + (e*f*Sin[(d*x)/2] + f^2*x*Sin[(d*x)/2])/(6*a*d^2*(Cos[c/2]
 + Sin[c/2])*(Cos[c/2 + (d*x)/2] + Sin[c/2 + (d*x)/2])^3) + (-3*d^2*e^2*Cos
[c/2] - d*e*f*Cos[c/2] - f^2*Cos[c/2] - 6*d^2*e*f*x*Cos[c/2] - d*f^2*x*Cos[
c/2] - 3*d^2*f^2*x^2*Cos[c/2] - 3*d^2*e^2*Sin[c/2] + d*e*f*Sin[c/2] - f^2*S
in[c/2] - 6*d^2*e*f*x*Sin[c/2] + d*f^2*x*Sin[c/2] - 3*d^2*f^2*x^2*Sin[c/2])
/(12*a*d^3*(Cos[c/2] + Sin[c/2])*(Cos[c/2 + (d*x)/2] + Sin[c/2 + (d*x)/2])^
2) + (7*(e*f*Sin[(d*x)/2] + f^2*x*Sin[(d*x)/2]))/(6*a*d^2*(Cos[c/2] + Sin[c
/2])*(Cos[c/2 + (d*x)/2] + Sin[c/2 + (d*x)/2]))
```

fricas [C] time = 0.65, size = 1513, normalized size = 3.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/48*(6*d^2*f^2*x^2 + 12*d^2*e*f*x + 6*d^2*e^2 - 16*(d*f^2*x + d*e*f)*cos(d
*x + c)^3 - 2*(9*d^2*f^2*x^2 + 18*d^2*e*f*x + 9*d^2*e^2 + 2*f^2)*cos(d*x +
c)^2 - 28*(d*f^2*x + d*e*f)*cos(d*x + c) + ((-18*I*d*f^2*x - 18*I*d*e*f)*co
s(d*x + c)^2*sin(d*x + c) + (-18*I*d*f^2*x - 18*I*d*e*f)*cos(d*x + c)^2)*di
log(I*cos(d*x + c) + sin(d*x + c)) + ((-18*I*d*f^2*x - 18*I*d*e*f)*cos(d*x
+ c)^2*sin(d*x + c) + (-18*I*d*f^2*x - 18*I*d*e*f)*cos(d*x + c)^2)*dilog(I*
cos(d*x + c) - sin(d*x + c)) + ((18*I*d*f^2*x + 18*I*d*e*f)*cos(d*x + c)^2*
sin(d*x + c) + (18*I*d*f^2*x + 18*I*d*e*f)*cos(d*x + c)^2)*dilog(-I*cos(d*x
 + c) + sin(d*x + c)) + ((18*I*d*f^2*x + 18*I*d*e*f)*cos(d*x + c)^2*sin(d*x
 + c) + (18*I*d*f^2*x + 18*I*d*e*f)*cos(d*x + c)^2)*dilog(-I*cos(d*x + c) -
 sin(d*x + c)) + ((9*d^2*e^2 - 18*c*d*e*f + (9*c^2 + 28)*f^2)*cos(d*x + c)^
2*sin(d*x + c) + (9*d^2*e^2 - 18*c*d*e*f + (9*c^2 + 28)*f^2)*cos(d*x + c)^2
)*log(cos(d*x + c) + I*sin(d*x + c) + I) - 3*((3*d^2*e^2 - 6*c*d*e*f + (3*c
^2 + 4)*f^2)*cos(d*x + c)^2*sin(d*x + c) + (3*d^2*e^2 - 6*c*d*e*f + (3*c^2
+ 4)*f^2)*cos(d*x + c)^2)*log(cos(d*x + c) - I*sin(d*x + c) + I) + 9*((d^2*
f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*cos(d*x + c)^2*sin(d*x + c) +
(d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*cos(d*x + c)^2)*log(I*cos
(d*x + c) + sin(d*x + c) + 1) - 9*((d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f -
```

```
 c^2*f^2)*cos(d*x + c)^2*sin(d*x + c) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*
e*f - c^2*f^2)*cos(d*x + c)^2)*log(I*cos(d*x + c) - sin(d*x + c) + 1) + 9*(
(d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*cos(d*x + c)^2*sin(d*x +
c) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*cos(d*x + c)^2)*log(
-I*cos(d*x + c) + sin(d*x + c) + 1) - 9*((d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d
*e*f - c^2*f^2)*cos(d*x + c)^2*sin(d*x + c) + (d^2*f^2*x^2 + 2*d^2*e*f*x +
2*c*d*e*f - c^2*f^2)*cos(d*x + c)^2)*log(-I*cos(d*x + c) - sin(d*x + c) + 1
) + ((9*d^2*e^2 - 18*c*d*e*f + (9*c^2 + 28)*f^2)*cos(d*x + c)^2*sin(d*x + c
) + (9*d^2*e^2 - 18*c*d*e*f + (9*c^2 + 28)*f^2)*cos(d*x + c)^2)*log(-cos(d*
x + c) + I*sin(d*x + c) + I) - 3*((3*d^2*e^2 - 6*c*d*e*f + (3*c^2 + 4)*f^2)
*cos(d*x + c)^2*sin(d*x + c) + (3*d^2*e^2 - 6*c*d*e*f + (3*c^2 + 4)*f^2)*co
s(d*x + c)^2)*log(-cos(d*x + c) - I*sin(d*x + c) + I) - 18*(f^2*cos(d*x + c
)^2*sin(d*x + c) + f^2*cos(d*x + c)^2)*polylog(3, I*cos(d*x + c) + sin(d*x
+ c)) + 18*(f^2*cos(d*x + c)^2*sin(d*x + c) + f^2*cos(d*x + c)^2)*polylog(3
, I*cos(d*x + c) - sin(d*x + c)) - 18*(f^2*cos(d*x + c)^2*sin(d*x + c) + f^
2*cos(d*x + c)^2)*polylog(3, -I*cos(d*x + c) + sin(d*x + c)) + 18*(f^2*cos(
d*x + c)^2*sin(d*x + c) + f^2*cos(d*x + c)^2)*polylog(3, -I*cos(d*x + c) -
sin(d*x + c)) + 2*(9*d^2*f^2*x^2 + 18*d^2*e*f*x + 9*d^2*e^2 - 10*(d*f^2*x +
 d*e*f)*cos(d*x + c))*sin(d*x + c))/(a*d^3*cos(d*x + c)^2*sin(d*x + c) + a*
d^3*cos(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \sec (dx+c)^3}{a \sin (dx+c)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sec(d*x + c)^3/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.62, size = 1119, normalized size = 2.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sec(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] 3/4*I/d^2/a*e*f*polylog(2,-I*exp(I*(d*x+c)))+7/6/d^3/a*f^2*ln(exp(I*(d*x+c)
)+I)-2/3/d^3/a*f^2*ln(exp(I*(d*x+c)))-3/8/d/a*e^2*ln(exp(I*(d*x+c))-I)+3/4/
d/a*f*e*ln(1-I*exp(I*(d*x+c)))*x+3/4/d^2/a*f*e*ln(1-I*exp(I*(d*x+c)))*c-3/4
/d^2/a*f*e*c*ln(exp(I*(d*x+c))+I)+3/8/d/a*f^2*ln(1-I*exp(I*(d*x+c)))*x^2-3/
8/d^3/a*f^2*ln(1-I*exp(I*(d*x+c)))*c^2+3/8/d/a*ln(exp(I*(d*x+c))+I)*e^2+3/8
/d^3/a*ln(1+I*exp(I*(d*x+c)))*c^2*f^2-3/8/d^3/a*f^2*c^2*ln(exp(I*(d*x+c))-I
```

```
)-3/8/d/a*ln(1+I*exp(I*(d*x+c)))*f^2*x^2-3/4/d/a*ln(1+I*exp(I*(d*x+c)))*e*f
*x-3/4/d^2/a*ln(1+I*exp(I*(d*x+c)))*c*e*f+3/4/d^2/a*e*f*c*ln(exp(I*(d*x+c))
-I)+3/8/d^3/a*f^2*c^2*ln(exp(I*(d*x+c))+I)+3/4*I/d^2/a*polylog(2,-I*exp(I*(
d*x+c)))*f^2*x-3/4*I/d^2/a*polylog(2,I*exp(I*(d*x+c)))*f^2*x-3/4*I/d^2/a*e*
f*polylog(2,I*exp(I*(d*x+c)))-1/12*I*(2*f^2*exp(5*I*(d*x+c))-16*I*d*f^2*x*e
xp(3*I*(d*x+c))-16*I*d*e*f*exp(3*I*(d*x+c))+18*d^2*e*f*x*exp(5*I*(d*x+c))+4
*f^2*exp(3*I*(d*x+c))+9*d^2*f^2*x^2*exp(I*(d*x+c))+8*d*e*f+2*f^2*exp(I*(d*x
+c))+9*d^2*e^2*exp(I*(d*x+c))+8*d*f^2*x+18*d^2*e*f*x*exp(I*(d*x+c))+9*d^2*e
^2*exp(5*I*(d*x+c))+6*d^2*e^2*exp(3*I*(d*x+c))+12*d^2*e*f*x*exp(3*I*(d*x+c)
)+18*I*d^2*e^2*exp(4*I*(d*x+c))+44*d*f^2*x*exp(2*I*(d*x+c))+44*d*e*f*exp(2*
I*(d*x+c))+6*d^2*f^2*x^2*exp(3*I*(d*x+c))+36*d*f^2*x*exp(4*I*(d*x+c))+36*d*
e*f*exp(4*I*(d*x+c))+9*d^2*f^2*x^2*exp(5*I*(d*x+c))-18*I*d^2*e^2*exp(2*I*(d
*x+c))-36*I*d^2*e*f*x*exp(2*I*(d*x+c))+36*I*d^2*e*f*x*exp(4*I*(d*x+c))-18*I
*d*f^2*x*exp(5*I*(d*x+c))-18*I*d*e*f*exp(5*I*(d*x+c))+18*I*d^2*f^2*x^2*exp(
4*I*(d*x+c))-18*I*d^2*f^2*x^2*exp(2*I*(d*x+c))+2*I*d*f^2*x*exp(I*(d*x+c))+2
*I*d*e*f*exp(I*(d*x+c)))/(exp(I*(d*x+c))+I)^4/d^3/(exp(I*(d*x+c))-I)^2/a-3/
4*f^2*polylog(3,-I*exp(I*(d*x+c)))/a/d^3+3/4*f^2*polylog(3,I*exp(I*(d*x+c))
)/a/d^3-1/2/d^3/a*f^2*ln(exp(I*(d*x+c))-I)
```

maxima [B] time = 17.70, size = 5262, normalized size = 12.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/16*(2*c*e*f*(2*(3*sin(d*x + c)^2 + 3*sin(d*x + c) - 2)/(a*d*sin(d*x + c)^
3 + a*d*sin(d*x + c)^2 - a*d*sin(d*x + c) - a*d) - 3*log(sin(d*x + c) + 1)/
(a*d) + 3*log(sin(d*x + c) - 1)/(a*d)) - e^2*(2*(3*sin(d*x + c)^2 + 3*sin(d
*x + c) - 2)/(a*sin(d*x + c)^3 + a*sin(d*x + c)^2 - a*sin(d*x + c) - a) - 3
*log(sin(d*x + c) + 1)/a + 3*log(sin(d*x + c) - 1)/a) - 16*(32*(d*x + c)*f^
2*cos(6*d*x + 6*c) + 32*I*(d*x + c)*f^2*sin(6*d*x + 6*c) + 32*d*e*f - 32*c*
f^2 - (2*(9*c^2 + 28)*f^2*cos(6*d*x + 6*c) + (36*I*c^2 + 112*I)*f^2*cos(5*d
*x + 5*c) + 2*(9*c^2 + 28)*f^2*cos(4*d*x + 4*c) + (72*I*c^2 + 224*I)*f^2*co
s(3*d*x + 3*c) - 2*(9*c^2 + 28)*f^2*cos(2*d*x + 2*c) + (36*I*c^2 + 112*I)*f
^2*cos(d*x + c) + (18*I*c^2 + 56*I)*f^2*sin(6*d*x + 6*c) - 4*(9*c^2 + 28)*f
^2*sin(5*d*x + 5*c) + (18*I*c^2 + 56*I)*f^2*sin(4*d*x + 4*c) - 8*(9*c^2 + 2
8)*f^2*sin(3*d*x + 3*c) + (-18*I*c^2 - 56*I)*f^2*sin(2*d*x + 2*c) - 4*(9*c^
2 + 28)*f^2*sin(d*x + c) - 2*(9*c^2 + 28)*f^2)*arctan2(sin(d*x + c) + 1, co
s(d*x + c)) + (6*(3*c^2 + 4)*f^2*cos(6*d*x + 6*c) - (-36*I*c^2 - 48*I)*f^2*
cos(5*d*x + 5*c) + 6*(3*c^2 + 4)*f^2*cos(4*d*x + 4*c) - (-72*I*c^2 - 96*I)*
f^2*cos(3*d*x + 3*c) - 6*(3*c^2 + 4)*f^2*cos(2*d*x + 2*c) - (-36*I*c^2 - 48
*I)*f^2*cos(d*x + c) - (-18*I*c^2 - 24*I)*f^2*sin(6*d*x + 6*c) - 12*(3*c^2
+ 4)*f^2*sin(5*d*x + 5*c) - (-18*I*c^2 - 24*I)*f^2*sin(4*d*x + 4*c) - 24*(3
*c^2 + 4)*f^2*sin(3*d*x + 3*c) - (18*I*c^2 + 24*I)*f^2*sin(2*d*x + 2*c) - 1
```

2*(3*c^2 + 4)*f^2*sin(d*x + c) - 6*(3*c^2 + 4)*f^2)*arctan2(sin(d*x + c) - 1, cos(d*x + c)) - (18*(d*x + c)^2*f^2 + 36*(d*e*f - c*f^2)*(d*x + c) - 18*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*cos(6*d*x + 6*c) + (-36*I*(d*x + c)^2*f^2 + (-72*I*d*e*f + 72*I*c*f^2)*(d*x + c))*cos(5*d*x + 5*c) - 18*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*cos(4*d*x + 4*c) + (-72*I*(d*x + c)^2*f^2 + (-144*I*d*e*f + 144*I*c*f^2)*(d*x + c))*cos(3*d*x + 3*c) + 18*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*cos(2*d*x + 2*c) + (-36*I*(d*x + c)^2*f^2 + (-72*I*d*e*f + 72*I*c*f^2)*(d*x + c))*cos(d*x + c) + (-18*I*(d*x + c)^2*f^2 + (-36*I*d*e*f + 36*I*c*f^2)*(d*x + c))*sin(6*d*x + 6*c) + 36*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*sin(5*d*x + 5*c) + (-18*I*(d*x + c)^2*f^2 + (-36*I*d*e*f + 36*I*c*f^2)*(d*x + c))*sin(4*d*x + 4*c) + 72*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*sin(3*d*x + 3*c) + (18*I*(d*x + c)^2*f^2 + (36*I*d*e*f - 36*I*c*f^2)*(d*x + c))*sin(2*d*x + 2*c) + 36*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*sin(d*x + c))*arctan2(cos(d*x + c), sin(d*x + c) + 1) - (18*(d*x + c)^2*f^2 + 36*(d*e*f - c*f^2)*(d*x + c) - 18*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*cos(6*d*x + 6*c) + (-36*I*(d*x + c)^2*f^2 + (-72*I*d*e*f + 72*I*c*f^2)*(d*x + c))*cos(5*d*x + 5*c) - 18*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*cos(4*d*x + 4*c) + (-72*I*(d*x + c)^2*f^2 + (-144*I*d*e*f + 144*I*c*f^2)*(d*x + c))*cos(3*d*x + 3*c) + 18*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*cos(2*d*x + 2*c) + (-36*I*(d*x + c)^2*f^2 + (-72*I*d*e*f + 72*I*c*f^2)*(d*x + c))*cos(d*x + c) + (-18*I*(d*x + c)^2*f^2 + (-36*I*d*e*f + 36*I*c*f^2)*(d*x + c))*sin(6*d*x + 6*c) + 36*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*sin(5*d*x + 5*c) + (-18*I*(d*x + c)^2*f^2 + (-36*I*d*e*f + 36*I*c*f^2)*(d*x + c))*sin(4*d*x + 4*c) + 72*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*sin(3*d*x + 3*c) + (18*I*(d*x + c)^2*f^2 + (36*I*d*e*f - 36*I*c*f^2)*(d*x + c))*sin(2*d*x + 2*c) + 36*((d*x + c)^2*f^2 + 2*(d*e*f - c*f^2)*(d*x + c))*sin(d*x + c))*arctan2(cos(d*x + c), -sin(d*x + c) + 1) + (36*(d*x + c)^2*f^2 - 72*I*d*e*f + 4*(9*c^2 + 18*I*c + 2)*f^2 + (72*d*e*f - (72*c + 8*I)*f^2)*(d*x + c))*cos(5*d*x + 5*c) - (-72*I*(d*x + c)^2*f^2 - 144*d*e*f + (-72*I*c^2 + 144*c)*f^2 - 16*(9*I*d*e*f + (-9*I*c + 11)*f^2)*(d*x + c))*cos(4*d*x + 4*c) + (24*(d*x + c)^2*f^2 - 64*I*d*e*f + 8*(3*c^2 + 8*I*c + 2)*f^2 + (48*d*e*f - (48*c - 64*I)*f^2)*(d*x + c))*cos(3*d*x + 3*c) - (72*I*(d*x + c)^2*f^2 - 176*d*e*f + (72*I*c^2 + 176*c)*f^2 + (144*I*d*e*f - 144*(I*c + 1)*f^2)*(d*x + c))*cos(2*d*x + 2*c) + (36*(d*x + c)^2*f^2 + 8*I*d*e*f + 4*(9*c^2 - 2*I*c + 2)*f^2 + (72*d*e*f - (72*c - 72*I)*f^2)*(d*x + c))*cos(d*x + c) - (36*d*e*f + 36*(d*x + c)*f^2 - 36*c*f^2 - 36*(d*e*f + (d*x + c)*f^2 - c*f^2)*cos(6*d*x + 6*c) + (-72*I*d*e*f - 72*I*(d*x + c)*f^2 + 72*I*c*f^2)*cos(5*d*x + 5*c) - 36*(d*e*f + (d*x + c)*f^2 - c*f^2)*cos(4*d*x + 4*c) + (-144*I*d*e*f - 144*I*(d*x + c)*f^2 + 144*I*c*f^2)*cos(3*d*x + 3*c) + 36*(d*e*f + (d*x + c)*f^2 - c*f^2)*cos(2*d*x + 2*c) + (-72*I*d*e*f - 72*I*(d*x + c)*f^2 + 72*I*c*f^2)*cos(d*x + c) + (-36*I*d*e*f - 36*I*(d*x + c)*f^2 + 36*I*c*f^2)*sin(6*d*x + 6*c) + 72*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(5*d*x + 5*c) + (-36*I*d*e*f - 36*I*(d*x + c)*f^2 + 36*I*c*f^2)*sin(4*d*x + 4*c) + 144*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(3*d*x + 3*c) + (36*I*d*e*f + 36*

I*(d*x + c)*f^2 - 36*I*c*f^2)*sin(2*d*x + 2*c) + 72*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(d*x + c))*dilog(I*e^(I*d*x + I*c)) + (36*d*e*f + 36*(d*x + c)*f^2 - 36*c*f^2 - 36*(d*e*f + (d*x + c)*f^2 - c*f^2)*cos(6*d*x + 6*c) - (72*I*d*e*f + 72*I*(d*x + c)*f^2 - 72*I*c*f^2)*cos(5*d*x + 5*c) - 36*(d*e*f + (d*x + c)*f^2 - c*f^2)*cos(4*d*x + 4*c) - (144*I*d*e*f + 144*I*(d*x + c)*f^2 - 144*I*c*f^2)*cos(3*d*x + 3*c) + 36*(d*e*f + (d*x + c)*f^2 - c*f^2)*cos(2*d*x + 2*c) - (72*I*d*e*f + 72*I*(d*x + c)*f^2 - 72*I*c*f^2)*cos(d*x + c) - (36*I*d*e*f + 36*I*(d*x + c)*f^2 - 36*I*c*f^2)*sin(6*d*x + 6*c) + 72*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(5*d*x + 5*c) - (36*I*d*e*f + 36*I*(d*x + c)*f^2 - 36*I*c*f^2)*sin(4*d*x + 4*c) + 144*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(3*d*x + 3*c) - (-36*I*d*e*f - 36*I*(d*x + c)*f^2 + 36*I*c*f^2)*sin(2*d*x + 2*c) + 72*(d*e*f + (d*x + c)*f^2 - c*f^2)*sin(d*x + c))*dilog(-I*e^(I*d*x + I*c)) - (9*I*(d*x + c)^2*f^2 + (9*I*c^2 + 28*I)*f^2 + (18*I*d*e*f - 18*I*c*f^2)*(d*x + c) + (-9*I*(d*x + c)^2*f^2 + (-9*I*c^2 - 28*I)*f^2 + (-18*I*d*e*f + 18*I*c*f^2)*(d*x + c))*cos(6*d*x + 6*c) + 2*(9*(d*x + c)^2*f^2 + (9*c^2 + 28)*f^2 + 18*(d*e*f - c*f^2)*(d*x + c))*cos(5*d*x + 5*c) + (-9*I*(d*x + c)^2*f^2 + (-9*I*c^2 - 28*I)*f^2 + (-18*I*d*e*f + 18*I*c*f^2)*(d*x + c))*cos(4*d*x + 4*c) + 4*(9*(d*x + c)^2*f^2 + (9*c^2 + 28)*f^2 + 18*(d*e*f - c*f^2)*(d*x + c))*cos(3*d*x + 3*c) + (9*I*(d*x + c)^2*f^2 + (9*I*c^2 + 28*I)*f^2 + (18*I*d*e*f - 18*I*c*f^2)*(d*x + c))*cos(2*d*x + 2*c) + 2*(9*(d*x + c)^2*f^2 + (9*c^2 + 28)*f^2 + 18*(d*e*f - c*f^2)*(d*x + c))*cos(d*x + c) + (9*(d*x + c)^2*f^2 + (9*c^2 + 28)*f^2 + 18*(d*e*f - c*f^2)*(d*x + c))*sin(6*d*x + 6*c) + (18*I*(d*x + c)^2*f^2 + (18*I*c^2 + 56*I)*f^2 + (36*I*d*e*f - 36*I*c*f^2)*(d*x + c))*sin(5*d*x + 5*c) + (9*(d*x + c)^2*f^2 + (9*c^2 + 28)*f^2 + 18*(d*e*f - c*f^2)*(d*x + c))*sin(4*d*x + 4*c) + (36*I*(d*x + c)^2*f^2 + (36*I*c^2 + 112*I)*f^2 + (72*I*d*e*f - 72*I*c*f^2)*(d*x + c))*sin(3*d*x + 3*c) - (9*(d*x + c)^2*f^2 + (9*c^2 + 28)*f^2 + 18*(d*e*f - c*f^2)*(d*x + c))*sin(2*d*x + 2*c) + (18*I*(d*x + c)^2*f^2 + (18*I*c^2 + 56*I)*f^2 + (36*I*d*e*f - 36*I*c*f^2)*(d*x + c))*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 + 2*sin(d*x + c) + 1) - (-9*I*(d*x + c)^2*f^2 + (-9*I*c^2 - 12*I)*f^2 + (-18*I*d*e*f + 18*I*c*f^2)*(d*x + c) + (9*I*(d*x + c)^2*f^2 + (9*I*c^2 + 12*I)*f^2 + (18*I*d*e*f - 18*I*c*f^2)*(d*x + c))*cos(6*d*x + 6*c) - 6*(3*(d*x + c)^2*f^2 + (3*c^2 + 4)*f^2 + 6*(d*e*f - c*f^2)*(d*x + c))*cos(5*d*x + 5*c) + (9*I*(d*x + c)^2*f^2 + (9*I*c^2 + 12*I)*f^2 + (18*I*d*e*f - 18*I*c*f^2)*(d*x + c))*cos(4*d*x + 4*c) - 12*(3*(d*x + c)^2*f^2 + (3*c^2 + 4)*f^2 + 6*(d*e*f - c*f^2)*(d*x + c))*cos(3*d*x + 3*c) + (-9*I*(d*x + c)^2*f^2 + (-9*I*c^2 - 12*I)*f^2 + (-18*I*d*e*f + 18*I*c*f^2)*(d*x + c))*cos(2*d*x + 2*c) - 6*(3*(d*x + c)^2*f^2 + (3*c^2 + 4)*f^2 + 6*(d*e*f - c*f^2)*(d*x + c))*cos(d*x + c) - 3*(3*(d*x + c)^2*f^2 + (3*c^2 + 4)*f^2 + 6*(d*e*f - c*f^2)*(d*x + c))*sin(6*d*x + 6*c) + (-18*I*(d*x + c)^2*f^2 + (-18*I*c^2 - 24*I)*f^2 + (-36*I*d*e*f + 36*I*c*f^2)*(d*x + c))*sin(5*d*x + 5*c) - 3*(3*(d*x + c)^2*f^2 + (3*c^2 + 4)*f^2 + 6*(d*e*f - c*f^2)*(d*x + c))*sin(4*d*x + 4*c) + (-36*I*(d*x + c)^2*f^2 + (-36*I*c^2 - 48*I)*f^2 + (-72*I*d*e*f + 72*I*c*f^2)*(d*x + c))*sin(3*d*x + 3*c) + 3*(3*(d*x + c)^2*f^2 + (3*c^2 + 4)*f^2 + 6*(d*e*f - c*f^2)*(d*x + c))*sin(2*d*x + 2*c) + (-18*I*(d*x + c)^2*f^2

```
+ (-18*I*c^2 - 24*I)*f^2 + (-36*I*d*e*f + 36*I*c*f^2)*(d*x + c))*sin(d*x +
c))*log(cos(d*x + c)^2 + sin(d*x + c)^2 - 2*sin(d*x + c) + 1) - (-36*I*f^2*
cos(6*d*x + 6*c) + 72*f^2*cos(5*d*x + 5*c) - 36*I*f^2*cos(4*d*x + 4*c) + 14
4*f^2*cos(3*d*x + 3*c) + 36*I*f^2*cos(2*d*x + 2*c) + 72*f^2*cos(d*x + c) +
36*f^2*sin(6*d*x + 6*c) + 72*I*f^2*sin(5*d*x + 5*c) + 36*f^2*sin(4*d*x + 4*
c) + 144*I*f^2*sin(3*d*x + 3*c) - 36*f^2*sin(2*d*x + 2*c) + 72*I*f^2*sin(d*
x + c) + 36*I*f^2)*polylog(3, I*e^(I*d*x + I*c)) - (36*I*f^2*cos(6*d*x + 6*
c) - 72*f^2*cos(5*d*x + 5*c) + 36*I*f^2*cos(4*d*x + 4*c) - 144*f^2*cos(3*d*
x + 3*c) - 36*I*f^2*cos(2*d*x + 2*c) - 72*f^2*cos(d*x + c) - 36*f^2*sin(6*d
*x + 6*c) - 72*I*f^2*sin(5*d*x + 5*c) - 36*f^2*sin(4*d*x + 4*c) - 144*I*f^2
*sin(3*d*x + 3*c) + 36*f^2*sin(2*d*x + 2*c) - 72*I*f^2*sin(d*x + c) - 36*I*
f^2)*polylog(3, -I*e^(I*d*x + I*c)) - (-36*I*(d*x + c)^2*f^2 - 72*d*e*f + (
-36*I*c^2 + 72*c - 8*I)*f^2 - 8*(9*I*d*e*f + (-9*I*c + 1)*f^2)*(d*x + c))*s
in(5*d*x + 5*c) - (72*(d*x + c)^2*f^2 - 144*I*d*e*f + 72*(c^2 + 2*I*c)*f^2
+ (144*d*e*f - (144*c + 176*I)*f^2)*(d*x + c))*sin(4*d*x + 4*c) - (-24*I*(d
*x + c)^2*f^2 - 64*d*e*f + (-24*I*c^2 + 64*c - 16*I)*f^2 - 16*(3*I*d*e*f +
(-3*I*c - 4)*f^2)*(d*x + c))*sin(3*d*x + 3*c) + (72*(d*x + c)^2*f^2 + 176*I
*d*e*f + 8*(9*c^2 - 22*I*c)*f^2 + (144*d*e*f - (144*c - 144*I)*f^2)*(d*x +
c))*sin(2*d*x + 2*c) - (-36*I*(d*x + c)^2*f^2 + 8*d*e*f + (-36*I*c^2 - 8*c
- 8*I)*f^2 + (-72*I*d*e*f - 72*(-I*c - 1)*f^2)*(d*x + c))*sin(d*x + c))/(-4
8*I*a*d^2*cos(6*d*x + 6*c) + 96*a*d^2*cos(5*d*x + 5*c) - 48*I*a*d^2*cos(4*d
*x + 4*c) + 192*a*d^2*cos(3*d*x + 3*c) + 48*I*a*d^2*cos(2*d*x + 2*c) + 96*a
*d^2*cos(d*x + c) + 48*a*d^2*sin(6*d*x + 6*c) + 96*I*a*d^2*sin(5*d*x + 5*c)
 + 48*a*d^2*sin(4*d*x + 4*c) + 192*I*a*d^2*sin(3*d*x + 3*c) - 48*a*d^2*sin(
2*d*x + 2*c) + 96*I*a*d^2*sin(d*x + c) + 48*I*a*d^2))/d
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cos(c + d*x)^3*(a + a*sin(c + d*x))),x)
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e^2\sec^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{f^2x^2\sec^3(c+dx)}{\sin(c+dx)+1}\,dx+\int \frac{2efx\sec^3(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sec(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e**2*sec(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(f**2*x**2*
sec(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(2*e*f*x*sec(c + d*x)**3/(
sin(c + d*x) + 1), x))/a
```

3.283 $\int \frac{(e+fx)\sec^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=241

$$\frac{3ifLi_2\left(-ie^{i(c+dx)}\right)}{8ad^2}-\frac{3ifLi_2\left(ie^{i(c+dx)}\right)}{8ad^2}+\frac{f\tan^3(c+dx)}{12ad^2}+\frac{f\tan(c+dx)}{4ad^2}-\frac{f\sec^3(c+dx)}{12ad^2}-\frac{3f\sec(c+dx)}{8ad^2}-\frac{3i(e+fx}{}$$

```
[Out] -3/4*I*(f*x+e)*arctan(exp(I*(d*x+c)))/a/d+3/8*I*f*polylog(2,-I*exp(I*(d*x+c
)))/a/d^2-3/8*I*f*polylog(2,I*exp(I*(d*x+c)))/a/d^2-3/8*f*sec(d*x+c)/a/d^2-
1/12*f*sec(d*x+c)^3/a/d^2-1/4*(f*x+e)*sec(d*x+c)^4/a/d+1/4*f*tan(d*x+c)/a/d
^2+3/8*(f*x+e)*sec(d*x+c)*tan(d*x+c)/a/d+1/4*(f*x+e)*sec(d*x+c)^3*tan(d*x+c
)/a/d+1/12*f*tan(d*x+c)^3/a/d^2
```

Rubi [A] time = 0.19, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {4531, 4185, 4181, 2279, 2391, 4409, 3767}

$$\frac{3if\text{PolyLog}\left(2,-ie^{i(c+dx)}\right)}{8ad^2}-\frac{3if\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{8ad^2}+\frac{f\tan^3(c+dx)}{12ad^2}+\frac{f\tan(c+dx)}{4ad^2}-\frac{f\sec^3(c+dx)}{12ad^2}-\frac{3f\sec(c}{8ad^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sec[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (((-3*I)/4)*(e + f*x)*ArcTan[E^(I*(c + d*x))])/(a*d) + (((3*I)/8)*f*PolyLog
[2, (-I)*E^(I*(c + d*x))])/(a*d^2) - (((3*I)/8)*f*PolyLog[2, I*E^(I*(c + d*
x))])/(a*d^2) - (3*f*Sec[c + d*x])/(8*a*d^2) - (f*Sec[c + d*x]^3)/(12*a*d^2
) - ((e + f*x)*Sec[c + d*x]^4)/(4*a*d) + (f*Tan[c + d*x])/(4*a*d^2) + (3*(e
 + f*x)*Sec[c + d*x]*Tan[c + d*x])/(8*a*d) + ((e + f*x)*Sec[c + d*x]^3*Tan[
c + d*x])/(4*a*d) + (f*Tan[c + d*x]^3)/(12*a*d^2)
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3767

```
Int[csc[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
ndIntegrand[(1 + x^2)^(n/2 - 1), x], x], x, Cot[c + d*x]], x] /; FreeQ[{c,
d}, x] && IGtQ[n/2, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4185

```
Int[(csc[(e_.) + (f_.)*(x_)]*(b_.))^(n_)*((c_.) + (d_.)*(x_)), x_Symbol] :>
 -Simp[(b^2*(c + d*x)*Cot[e + f*x]*(b*Csc[e + f*x])^(n - 2))/(f*(n - 1)), x
] + (Dist[(b^2*(n - 2))/(n - 1), Int[(c + d*x)*(b*Csc[e + f*x])^(n - 2), x]
, x] - Simp[(b^2*d*(b*Csc[e + f*x])^(n - 2))/(f^2*(n - 1)*(n - 2)), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && NeQ[n, 2]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4531

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Sec[c +
d*x]^(n + 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Sec[c + d*x]^(n + 1)*Tan[c
 + d*x], x], x] /; FreeQ[{a, b, c, d, e, f, n}, x] && IGtQ[m, 0] && EqQ[a^2
 - b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)\sec^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)\sec^5(c+dx)\,dx}{a} - \frac{\int (e+fx)\sec^4(c+dx)\tan(c+dx)\,dx}{a}$$
$$= -\frac{f\sec^3(c+dx)}{12ad^2} - \frac{(e+fx)\sec^4(c+dx)}{4ad} + \frac{(e+fx)\sec^3(c+dx)\tan(c+dx)}{4ad} + \frac{3}{\cdots}$$
$$= -\frac{3f\sec(c+dx)}{8ad^2} - \frac{f\sec^3(c+dx)}{12ad^2} - \frac{(e+fx)\sec^4(c+dx)}{4ad} + \frac{3(e+fx)\sec(c+dx)}{8ad}\cdots$$
$$= -\frac{3i(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} - \frac{3f\sec(c+dx)}{8ad^2} - \frac{f\sec^3(c+dx)}{12ad^2} - \frac{(e+fx)\sec^4(c+\cdots}{4ad}$$
$$= -\frac{3i(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} - \frac{3f\sec(c+dx)}{8ad^2} - \frac{f\sec^3(c+dx)}{12ad^2} - \frac{(e+fx)\sec^4(c+\cdots}{4ad}$$
$$= -\frac{3i(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{4ad} + \frac{3if\operatorname{Li}_2\left(-ie^{i(c+dx)}\right)}{8ad^2} - \frac{3if\operatorname{Li}_2\left(ie^{i(c+dx)}\right)}{8ad^2} - \frac{3f\sec(c+\cdots}{8ad^2}$$

Mathematica [B] time = 6.58, size = 1171, normalized size = 4.86

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Sec[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (-6*d*e - f + 6*c*f - 6*f*(c + d*x))/(24*d^2*(a + a*Sin[c + d*x])) + (-(d*e
) + c*f - f*(c + d*x))/(8*d^2*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^2*(a +
a*Sin[c + d*x])) + (f*Sin[(c + d*x)/2])/(12*d^2*(Cos[(c + d*x)/2] + Sin[(c
+ d*x)/2])*(a + a*Sin[c + d*x])) + (7*f*Sin[(c + d*x)/2]*(Cos[(c + d*x)/2]
+ Sin[(c + d*x)/2]))/(12*d^2*(a + a*Sin[c + d*x])) + (3*(c + d*x)*(2*d*e -
2*c*f + f*(c + d*x))*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^2)/(16*d^2*(a +
a*Sin[c + d*x])) + (3*e*((-c - d*x)/2 - Log[Cos[(c + d*x)/2] - Sin[(c + d*x
)/2]])*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^2)/(8*d*(a + a*Sin[c + d*x]))
- (3*c*f*((-c - d*x)/2 - Log[Cos[(c + d*x)/2] - Sin[(c + d*x)/2]])*(Cos[(c
+ d*x)/2] + Sin[(c + d*x)/2])^2)/(8*d^2*(a + a*Sin[c + d*x])) - (3*e*((c +
d*x)/2 - Log[Cos[(c + d*x)/2] + Sin[(c + d*x)/2]])*(Cos[(c + d*x)/2] + Sin[
(c + d*x)/2])^2)/(8*d*(a + a*Sin[c + d*x])) + (3*c*f*((c + d*x)/2 - Log[Cos
[(c + d*x)/2] + Sin[(c + d*x)/2]])*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^2)
/(8*d^2*(a + a*Sin[c + d*x])) - (3*f*((c + d*x)^2/(4*E^((I/4)*Pi)) - (((-3*
I)/4)*Pi*(c + d*x) - Pi*Log[1 + E^((-I)*(c + d*x))] - 2*(-1/4*Pi + (c + d*x
)/2)*Log[1 - E^((2*I)*(-1/4*Pi + (c + d*x)/2))] + Pi*Log[Cos[(c + d*x)/2]]
- (Pi*Log[-Sin[Pi/4 + (-c - d*x)/2]])/2 + I*PolyLog[2, E^((2*I)*(-1/4*Pi +
(c + d*x)/2))])/Sqrt[2])*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^2)/(4*Sqrt[2
```

```
]*d^2*(a + a*Sin[c + d*x])) - (3*f*((E^((I/4)*Pi)*(c + d*x)^2)/4 + ((-1/4*I
)*Pi*(c + d*x) - Pi*Log[1 + E^((-I)*(c + d*x))] - 2*(Pi/4 + (c + d*x)/2)*Lo
g[1 - E^((2*I)*(Pi/4 + (c + d*x)/2))] + Pi*Log[Cos[(c + d*x)/2]] + (Pi*Log[
Sin[Pi/4 + (c + d*x)/2]])/2 + I*PolyLog[2, E^((2*I)*(Pi/4 + (c + d*x)/2))])
/Sqrt[2])*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^2)/(4*Sqrt[2]*d^2*(a + a*Si
n[c + d*x])) + ((d*e - c*f + f*(c + d*x))*(Cos[(c + d*x)/2] + Sin[(c + d*x)
/2])^2)/(8*d^2*(Cos[(c + d*x)/2] - Sin[(c + d*x)/2])^2*(a + a*Sin[c + d*x])
) - (f*Sin[(c + d*x)/2]*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^2)/(4*d^2*(Co
s[(c + d*x)/2] - Sin[(c + d*x)/2])*(a + a*Sin[c + d*x]))
```

fricas [B] time = 0.59, size = 792, normalized size = 3.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/48*(8*f*cos(d*x + c)^3 - 6*d*f*x + 18*(d*f*x + d*e)*cos(d*x + c)^2 - 6*d
*e + 14*f*cos(d*x + c) - (-9*I*f*cos(d*x + c)^2*sin(d*x + c) - 9*I*f*cos(d*
x + c)^2)*dilog(I*cos(d*x + c) + sin(d*x + c)) - (-9*I*f*cos(d*x + c)^2*sin
(d*x + c) - 9*I*f*cos(d*x + c)^2)*dilog(I*cos(d*x + c) - sin(d*x + c)) - (9
*I*f*cos(d*x + c)^2*sin(d*x + c) + 9*I*f*cos(d*x + c)^2)*dilog(-I*cos(d*x +
 c) + sin(d*x + c)) - (9*I*f*cos(d*x + c)^2*sin(d*x + c) + 9*I*f*cos(d*x +
c)^2)*dilog(-I*cos(d*x + c) - sin(d*x + c)) - 9*((d*e - c*f)*cos(d*x + c)^2
*sin(d*x + c) + (d*e - c*f)*cos(d*x + c)^2)*log(cos(d*x + c) + I*sin(d*x +
c) + I) + 9*((d*e - c*f)*cos(d*x + c)^2*sin(d*x + c) + (d*e - c*f)*cos(d*x
+ c)^2)*log(cos(d*x + c) - I*sin(d*x + c) + I) - 9*((d*f*x + c*f)*cos(d*x +
 c)^2*sin(d*x + c) + (d*f*x + c*f)*cos(d*x + c)^2)*log(I*cos(d*x + c) + sin
(d*x + c) + 1) + 9*((d*f*x + c*f)*cos(d*x + c)^2*sin(d*x + c) + (d*f*x + c*
f)*cos(d*x + c)^2)*log(I*cos(d*x + c) - sin(d*x + c) + 1) - 9*((d*f*x + c*f
)*cos(d*x + c)^2*sin(d*x + c) + (d*f*x + c*f)*cos(d*x + c)^2)*log(-I*cos(d*
x + c) + sin(d*x + c) + 1) + 9*((d*f*x + c*f)*cos(d*x + c)^2*sin(d*x + c) +
 (d*f*x + c*f)*cos(d*x + c)^2)*log(-I*cos(d*x + c) - sin(d*x + c) + 1) - 9*
((d*e - c*f)*cos(d*x + c)^2*sin(d*x + c) + (d*e - c*f)*cos(d*x + c)^2)*log(
-cos(d*x + c) + I*sin(d*x + c) + I) + 9*((d*e - c*f)*cos(d*x + c)^2*sin(d*x
 + c) + (d*e - c*f)*cos(d*x + c)^2)*log(-cos(d*x + c) - I*sin(d*x + c) + I)
 - 2*(9*d*f*x + 9*d*e - 5*f*cos(d*x + c))*sin(d*x + c))/(a*d^2*cos(d*x + c)
^2*sin(d*x + c) + a*d^2*cos(d*x + c)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx + e\right)\sec\left(dx + c\right)^3}{a\sin\left(dx + c\right) + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)*sec(d*x + c)^3/(a*sin(d*x + c) + a), x)
```

maple [B] time = 0.66, size = 483, normalized size = 2.00

$$-\frac{i\left(-18ide\,e^{2i(dx+c)}+9dfx\,e^{5i(dx+c)}+18ide\,e^{4i(dx+c)}-18idfx\,e^{2i(dx+c)}+9de\,e^{5i(dx+c)}+18idfx\,e^{4i(dx+c)}+6dfx\,e^{3}\right.}{12\left(e^{i(dx+c)}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sec(d*x+c)^3/(a+a*sin(d*x+c)),x)
[Out] -1/12*I*(-18*I*d*e*exp(2*I*(d*x+c))+9*d*f*x*exp(5*I*(d*x+c))+18*I*d*e*exp(4
*I*(d*x+c))-18*I*d*f*x*exp(2*I*(d*x+c))+9*d*e*exp(5*I*(d*x+c))+18*I*d*f*x*e
xp(4*I*(d*x+c))+6*d*f*x*exp(3*I*(d*x+c))-8*I*f*exp(3*I*(d*x+c))-9*I*f*exp(5
*I*(d*x+c))+6*d*e*exp(3*I*(d*x+c))+18*f*exp(4*I*(d*x+c))+9*d*f*x*exp(I*(d*x
+c))+I*f*exp(I*(d*x+c))+9*d*e*exp(I*(d*x+c))+22*f*exp(2*I*(d*x+c))+4*f)/(ex
p(I*(d*x+c))+I)^4/d^2/(exp(I*(d*x+c))-I)^2/a-3/8/a/d*e*ln(exp(I*(d*x+c))-I)
+3/8/d/a*ln(exp(I*(d*x+c))+I)*e-3/8/a/d*f*ln(1+I*exp(I*(d*x+c)))*x-3/8/a/d^
2*f*ln(1+I*exp(I*(d*x+c)))*c+3/8*I*f*polylog(2,-I*exp(I*(d*x+c)))/a/d^2+3/8
/d/a*f*ln(1-I*exp(I*(d*x+c)))*x+3/8/d^2/a*f*ln(1-I*exp(I*(d*x+c)))*c-3/8*I*
f*polylog(2,I*exp(I*(d*x+c)))/a/d^2+3/8/a/d^2*f*c*ln(exp(I*(d*x+c))-I)-3/8/
d^2/a*f*c*ln(exp(I*(d*x+c))+I)
```

maxima [B] time = 2.94, size = 1974, normalized size = 8.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] ((18*d*e*cos(6*d*x + 6*c) + 36*I*d*e*cos(5*d*x + 5*c) + 18*d*e*cos(4*d*x +
4*c) + 72*I*d*e*cos(3*d*x + 3*c) - 18*d*e*cos(2*d*x + 2*c) + 36*I*d*e*cos(d
*x + c) + 18*I*d*e*sin(6*d*x + 6*c) - 36*d*e*sin(5*d*x + 5*c) + 18*I*d*e*si
n(4*d*x + 4*c) - 72*d*e*sin(3*d*x + 3*c) - 18*I*d*e*sin(2*d*x + 2*c) - 36*d
*e*sin(d*x + c) - 18*d*e)*arctan2(sin(d*x + c) + 1, cos(d*x + c)) - (18*d*e
*cos(6*d*x + 6*c) + 36*I*d*e*cos(5*d*x + 5*c) + 18*d*e*cos(4*d*x + 4*c) + 7
2*I*d*e*cos(3*d*x + 3*c) - 18*d*e*cos(2*d*x + 2*c) + 36*I*d*e*cos(d*x + c)
+ 18*I*d*e*sin(6*d*x + 6*c) - 36*d*e*sin(5*d*x + 5*c) + 18*I*d*e*sin(4*d*x
+ 4*c) - 72*d*e*sin(3*d*x + 3*c) - 18*I*d*e*sin(2*d*x + 2*c) - 36*d*e*sin(d
*x + c) - 18*d*e)*arctan2(sin(d*x + c) - 1, cos(d*x + c)) - (18*d*f*x*cos(6
*d*x + 6*c) + 36*I*d*f*x*cos(5*d*x + 5*c) + 18*d*f*x*cos(4*d*x + 4*c) + 72*
I*d*f*x*cos(3*d*x + 3*c) - 18*d*f*x*cos(2*d*x + 2*c) + 36*I*d*f*x*cos(d*x +
 c) + 18*I*d*f*x*sin(6*d*x + 6*c) - 36*d*f*x*sin(5*d*x + 5*c) + 18*I*d*f*x*
```

```
sin(4*d*x + 4*c) - 72*d*f*x*sin(3*d*x + 3*c) - 18*I*d*f*x*sin(2*d*x + 2*c)
- 36*d*f*x*sin(d*x + c) - 18*d*f*x)*arctan2(cos(d*x + c), sin(d*x + c) + 1)
 - (18*d*f*x*cos(6*d*x + 6*c) + 36*I*d*f*x*cos(5*d*x + 5*c) + 18*d*f*x*cos(
4*d*x + 4*c) + 72*I*d*f*x*cos(3*d*x + 3*c) - 18*d*f*x*cos(2*d*x + 2*c) + 36
*I*d*f*x*cos(d*x + c) + 18*I*d*f*x*sin(6*d*x + 6*c) - 36*d*f*x*sin(5*d*x +
5*c) + 18*I*d*f*x*sin(4*d*x + 4*c) - 72*d*f*x*sin(3*d*x + 3*c) - 18*I*d*f*x
*sin(2*d*x + 2*c) - 36*d*f*x*sin(d*x + c) - 18*d*f*x)*arctan2(cos(d*x + c),
 -sin(d*x + c) + 1) - (36*d*f*x + 36*d*e - 36*I*f)*cos(5*d*x + 5*c) + (-72*
I*d*f*x - 72*I*d*e - 72*f)*cos(4*d*x + 4*c) - (24*d*f*x + 24*d*e - 32*I*f)*
cos(3*d*x + 3*c) + (72*I*d*f*x + 72*I*d*e - 88*f)*cos(2*d*x + 2*c) - (36*d*
f*x + 36*d*e + 4*I*f)*cos(d*x + c) - (18*f*cos(6*d*x + 6*c) + 36*I*f*cos(5*
d*x + 5*c) + 18*f*cos(4*d*x + 4*c) + 72*I*f*cos(3*d*x + 3*c) - 18*f*cos(2*d
*x + 2*c) + 36*I*f*cos(d*x + c) + 18*I*f*sin(6*d*x + 6*c) - 36*f*sin(5*d*x
+ 5*c) + 18*I*f*sin(4*d*x + 4*c) - 72*f*sin(3*d*x + 3*c) - 18*I*f*sin(2*d*x
 + 2*c) - 36*f*sin(d*x + c) - 18*f)*dilog(I*e^(I*d*x + I*c)) + (18*f*cos(6*
d*x + 6*c) + 36*I*f*cos(5*d*x + 5*c) + 18*f*cos(4*d*x + 4*c) + 72*I*f*cos(3
*d*x + 3*c) - 18*f*cos(2*d*x + 2*c) + 36*I*f*cos(d*x + c) + 18*I*f*sin(6*d*
x + 6*c) - 36*f*sin(5*d*x + 5*c) + 18*I*f*sin(4*d*x + 4*c) - 72*f*sin(3*d*x
 + 3*c) - 18*I*f*sin(2*d*x + 2*c) - 36*f*sin(d*x + c) - 18*f)*dilog(-I*e^(I
*d*x + I*c)) + (9*I*d*f*x + 9*I*d*e + (-9*I*d*f*x - 9*I*d*e)*cos(6*d*x + 6*
c) + 18*(d*f*x + d*e)*cos(5*d*x + 5*c) + (-9*I*d*f*x - 9*I*d*e)*cos(4*d*x +
 4*c) + 36*(d*f*x + d*e)*cos(3*d*x + 3*c) + (9*I*d*f*x + 9*I*d*e)*cos(2*d*x
 + 2*c) + 18*(d*f*x + d*e)*cos(d*x + c) + 9*(d*f*x + d*e)*sin(6*d*x + 6*c)
+ (18*I*d*f*x + 18*I*d*e)*sin(5*d*x + 5*c) + 9*(d*f*x + d*e)*sin(4*d*x + 4*
c) + (36*I*d*f*x + 36*I*d*e)*sin(3*d*x + 3*c) - 9*(d*f*x + d*e)*sin(2*d*x +
 2*c) + (18*I*d*f*x + 18*I*d*e)*sin(d*x + c))*log(cos(d*x + c)^2 + sin(d*x
+ c)^2 + 2*sin(d*x + c) + 1) + (-9*I*d*f*x - 9*I*d*e + (9*I*d*f*x + 9*I*d*e
)*cos(6*d*x + 6*c) - 18*(d*f*x + d*e)*cos(5*d*x + 5*c) + (9*I*d*f*x + 9*I*d
*e)*cos(4*d*x + 4*c) - 36*(d*f*x + d*e)*cos(3*d*x + 3*c) + (-9*I*d*f*x - 9*
I*d*e)*cos(2*d*x + 2*c) - 18*(d*f*x + d*e)*cos(d*x + c) - 9*(d*f*x + d*e)*s
in(6*d*x + 6*c) + (-18*I*d*f*x - 18*I*d*e)*sin(5*d*x + 5*c) - 9*(d*f*x + d*
e)*sin(4*d*x + 4*c) + (-36*I*d*f*x - 36*I*d*e)*sin(3*d*x + 3*c) + 9*(d*f*x
+ d*e)*sin(2*d*x + 2*c) + (-18*I*d*f*x - 18*I*d*e)*sin(d*x + c))*log(cos(d*
x + c)^2 + sin(d*x + c)^2 - 2*sin(d*x + c) + 1) + (-36*I*d*f*x - 36*I*d*e -
 36*f)*sin(5*d*x + 5*c) + (72*d*f*x + 72*d*e - 72*I*f)*sin(4*d*x + 4*c) + (
-24*I*d*f*x - 24*I*d*e - 32*f)*sin(3*d*x + 3*c) - (72*d*f*x + 72*d*e + 88*I
*f)*sin(2*d*x + 2*c) + (-36*I*d*f*x - 36*I*d*e + 4*f)*sin(d*x + c) - 16*f)/
(-48*I*a*d^2*cos(6*d*x + 6*c) + 96*a*d^2*cos(5*d*x + 5*c) - 48*I*a*d^2*cos(
4*d*x + 4*c) + 192*a*d^2*cos(3*d*x + 3*c) + 48*I*a*d^2*cos(2*d*x + 2*c) + 9
6*a*d^2*cos(d*x + c) + 48*a*d^2*sin(6*d*x + 6*c) + 96*I*a*d^2*sin(5*d*x + 5
*c) + 48*a*d^2*sin(4*d*x + 4*c) + 192*I*a*d^2*sin(3*d*x + 3*c) - 48*a*d^2*s
in(2*d*x + 2*c) + 96*I*a*d^2*sin(d*x + c) + 48*I*a*d^2)
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cos(c + d*x)^3*(a + a*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{e\sec^3(c+dx)}{\sin(c+dx)+1}\,dx + \int \frac{fx\sec^3(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] (Integral(e*sec(c + d*x)**3/(sin(c + d*x) + 1), x) + Integral(f*x*sec(c + d
*x)**3/(sin(c + d*x) + 1), x))/a
```

3.284 $\int \frac{\sec^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=77

$$-\frac{a}{8d(a\sin(c+dx)+a)^2}+\frac{1}{8d(a-a\sin(c+dx))}-\frac{1}{4d(a\sin(c+dx)+a)}+\frac{3\tanh^{-1}(\sin(c+dx))}{8ad}$$

```
[Out] 3/8*arctanh(sin(d*x+c))/a/d+1/8/d/(a-a*sin(d*x+c))-1/8*a/d/(a+a*sin(d*x+c))
^2-1/4/d/(a+a*sin(d*x+c))
```

Rubi [A] time = 0.08, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {2667, 44, 206}

$$-\frac{a}{8d(a\sin(c+dx)+a)^2}+\frac{1}{8d(a-a\sin(c+dx))}-\frac{1}{4d(a\sin(c+dx)+a)}+\frac{3\tanh^{-1}(\sin(c+dx))}{8ad}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[c + d*x]^3/(a + a*Sin[c + d*x]),x]
```

```
[Out] (3*ArcTanh[Sin[c + d*x]])/(8*a*d) + 1/(8*d*(a - a*Sin[c + d*x])) - a/(8*d*(
a + a*Sin[c + d*x])^2) - 1/(4*d*(a + a*Sin[c + d*x]))
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2667

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^(m + (p - 1)/2)*(a - x)
^((p - 1)/2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && In
tegerQ[(p - 1)/2] && EqQ[a^2 - b^2, 0] && (GeQ[p, -1] ||  !IntegerQ[m + 1/2
])
```

Rubi steps

$$\int \frac{\sec^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{a^3\,\text{Subst}\left(\int \frac{1}{(a-x)^2(a+x)^3}\,dx, x, a\sin(c+dx)\right)}{d}$$

$$= \frac{a^3\,\text{Subst}\left(\int \left(\frac{1}{8a^3(a-x)^2} + \frac{1}{4a^2(a+x)^3} + \frac{1}{4a^3(a+x)^2} + \frac{3}{8a^3\left(a^2-x^2\right)}\right) dx, x, a\sin(c+dx)\right)}{d}$$

$$= \frac{1}{8d(a-a\sin(c+dx))} - \frac{a}{8d(a+a\sin(c+dx))^2} - \frac{1}{4d(a+a\sin(c+dx))} + \frac{3\,\text{Subst}\left(\int \ldots\right.}{}$$

$$= \frac{3\tanh^{-1}(\sin(c+dx))}{8ad} + \frac{1}{8d(a-a\sin(c+dx))} - \frac{a}{8d(a+a\sin(c+dx))^2} - \frac{1}{4d(a+a\sin\ldots}$$

Mathematica [A] time = 0.11, size = 75, normalized size = 0.97

$$-\frac{\sec^2(c+dx)\left(-3\sin^2(c+dx) - 3\sin(c+dx) + 3(\sin(c+dx)-1)(\sin(c+dx)+1)^2\tanh^{-1}(\sin(c+dx)) + 2\right)}{8ad(\sin(c+dx)+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[c + d*x]^3/(a + a*Sin[c + d*x]),x]
```

```
[Out] -1/8*(Sec[c + d*x]^2*(2 - 3*Sin[c + d*x] - 3*Sin[c + d*x]^2 + 3*ArcTanh[Sin
[c + d*x]]*(-1 + Sin[c + d*x])*(1 + Sin[c + d*x])^2))/(a*d*(1 + Sin[c + d*x
]))
```

fricas [A] time = 0.45, size = 125, normalized size = 1.62

$$-\frac{6\cos(dx+c)^2 - 3\left(\cos(dx+c)^2\sin(dx+c) + \cos(dx+c)^2\right)\log(\sin(dx+c)+1) + 3\left(\cos(dx+c)^2\sin(dx \ldots\right.}{16\left(ad\cos(dx+c)^2\sin(dx+c) + ad\cos(dx+c \ldots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/16*(6*cos(d*x + c)^2 - 3*(cos(d*x + c)^2*sin(d*x + c) + cos(d*x + c)^2)*
log(sin(d*x + c) + 1) + 3*(cos(d*x + c)^2*sin(d*x + c) + cos(d*x + c)^2)*lo
g(-sin(d*x + c) + 1) - 6*sin(d*x + c) - 2)/(a*d*cos(d*x + c)^2*sin(d*x + c)
 + a*d*cos(d*x + c)^2)
```

giac [A] time = 1.99, size = 96, normalized size = 1.25

$$\frac{\frac{6\log(|\sin(dx+c)+1|)}{a} - \frac{6\log(|\sin(dx+c)-1|)}{a} + \frac{2(3\sin(dx+c)-5)}{a(\sin(dx+c)-1)} - \frac{9\sin(dx+c)^2+26\sin(dx+c)+21}{a(\sin(dx+c)+1)^2}}{32d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/32*(6*log(abs(sin(d*x + c) + 1))/a - 6*log(abs(sin(d*x + c) - 1))/a + 2*(
3*sin(d*x + c) - 5)/(a*(sin(d*x + c) - 1)) - (9*sin(d*x + c)^2 + 26*sin(d*x
 + c) + 21)/(a*(sin(d*x + c) + 1)^2))/d
```

maple [A] time = 0.14, size = 90, normalized size = 1.17

$$-\frac{1}{8ad(\sin(dx+c)-1)} - \frac{3\ln(\sin(dx+c)-1)}{16ad} - \frac{1}{8ad(1+\sin(dx+c))^2} - \frac{1}{4ad(1+\sin(dx+c))} + \frac{3\ln(1+\sin(dx+c))}{16ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(d*x+c)^3/(a+a*sin(d*x+c)),x)
```

```
[Out] -1/8/a/d/(sin(d*x+c)-1)-3/16/a/d*ln(sin(d*x+c)-1)-1/8/a/d/(1+sin(d*x+c))^2-
1/4/a/d/(1+sin(d*x+c))+3/16*ln(1+sin(d*x+c))/a/d
```

maxima [A] time = 0.74, size = 91, normalized size = 1.18

$$-\frac{\frac{2\left(3\sin(dx+c)^2+3\sin(dx+c)-2\right)}{a\sin(dx+c)^3+a\sin(dx+c)^2-a\sin(dx+c)-a} - \frac{3\log(\sin(dx+c)+1)}{a} + \frac{3\log(\sin(dx+c)-1)}{a}}{16d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/16*(2*(3*sin(d*x + c)^2 + 3*sin(d*x + c) - 2)/(a*sin(d*x + c)^3 + a*sin(
d*x + c)^2 - a*sin(d*x + c) - a) - 3*log(sin(d*x + c) + 1)/a + 3*log(sin(d*
x + c) - 1)/a)/d
```

mupad [B] time = 0.10, size = 74, normalized size = 0.96

$$\frac{3\,\mathrm{atanh}\left(\sin\left(c+d\,x\right)\right)}{8\,a\,d} + \frac{\frac{3\sin(c+d\,x)^2}{8} + \frac{3\,\sin(c+d\,x)}{8} - \frac{1}{4}}{d\,\left(-a\sin\left(c+d\,x\right)^3 - a\sin\left(c+d\,x\right)^2 + a\,\sin\left(c+d\,x\right) + a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(c + d*x)^3*(a + a*sin(c + d*x))),x)
```

```
[Out] (3*atanh(sin(c + d*x)))/(8*a*d) + ((3*sin(c + d*x))/8 + (3*sin(c + d*x)^2)/
8 - 1/4)/(d*(a + a*sin(c + d*x) - a*sin(c + d*x)^2 - a*sin(c + d*x)^3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sec^3(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)**3/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sec(c + d*x)**3/(sin(c + d*x) + 1), x)/a
```

3.285 $\int \frac{\sec^3(c+dx)}{(e+fx)(a+a\sin(c+dx))} \, dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sec^3(c+dx)}{(e+fx)(a\sin(c+dx)+a)},x\right)$$

[Out] Unintegrable(sec(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x)

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sec^3(c+dx)}{(e+fx)(a+a\sin(c+dx))} \, dx$$

Verification is Not applicable to the result.

[In] Int[Sec[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])),x]

[Out] Defer[Int][Sec[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])), x]

Rubi steps

$$\int \frac{\sec^3(c+dx)}{(e+fx)(a+a\sin(c+dx))} \, dx = \int \frac{\sec^3(c+dx)}{(e+fx)(a+a\sin(c+dx))} \, dx$$

Mathematica [A] time = 36.08, size = 0, normalized size = 0.00

$$\int \frac{\sec^3(c+dx)}{(e+fx)(a+a\sin(c+dx))} \, dx$$

Verification is Not applicable to the result.

[In] Integrate[Sec[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])),x]

[Out] Integrate[Sec[c + d*x]^3/((e + f*x)*(a + a*Sin[c + d*x])), x]

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sec(dx+c)^3}{afx+ae+(afx+ae)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral(sec(d*x + c)^3/(a*f*x + a*e + (a*f*x + a*e)*sin(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] Timed out
```

maple [A] time = 6.45, size = 0, normalized size = 0.00

$$\int \frac{\sec^{3}\left(dx+c\right)}{\left(fx+e\right)\left(a+a\sin\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x)
[Out] int(sec(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^3/(f*x+e)/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{{\cos\left(c+d\,x\right)}^3\,\left(e+f\,x\right)\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(c + d*x)^3*(e + f*x)*(a + a*sin(c + d*x))),x)
[Out] int(1/(cos(c + d*x)^3*(e + f*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sec^{3}{\left(c+dx\right)}}{e\sin{\left(c+dx\right)}+e+fx\sin{\left(c+dx\right)}+fx}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)**3/(f*x+e)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sec(c + d*x)**3/(e*sin(c + d*x) + e + f*x*sin(c + d*x) + f*x), x)/
a
```

3.286 $\int \frac{\sec^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$

Optimal. Leaf size=31

$$\mathrm{Int}\left(\frac{\sec^3(c+dx)}{(e+fx)^2(a\sin(c+dx)+a)},x\right)$$

```
[Out] Unintegrable(sec(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\sec^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sec[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] Defer[Int][Sec[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

Rubi steps

$$\int \frac{\sec^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx=\int \frac{\sec^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Mathematica [A] time = 54.48, size = 0, normalized size = 0.00

$$\int \frac{\sec^3(c+dx)}{(e+fx)^2(a+a\sin(c+dx))}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sec[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])),x]
```

```
[Out] Integrate[Sec[c + d*x]^3/((e + f*x)^2*(a + a*Sin[c + d*x])), x]
```

fricas [A] time = 0.59, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sec(dx+c)^3}{af^2x^2+2\,aefx+ae^2+\left(af^2x^2+2\,aefx+ae^2\right)\sin(dx+c)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral(sec(d*x + c)^3/(a*f^2*x^2 + 2*a*e*f*x + a*e^2 + (a*f^2*x^2 + 2*a*e
*f*x + a*e^2)*sin(d*x + c)), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 2.46, size = 0, normalized size = 0.00

$$\int \frac{\sec^{3}\left(dx+c\right)}{\left(fx+e\right)^{2}\left(a+a\sin\left(dx+c\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int(sec(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^3/(f*x+e)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{1}{\cos\left(c+d\,x\right)^{3}\,{\left(e+f\,x\right)}^{2}\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(c + d*x)^3*(e + f*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int(1/(cos(c + d*x)^3*(e + f*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\sec^3(c+dx)}{e^2\sin(c+dx)+e^2+2efx\sin(c+dx)+2efx+f^2x^2\sin(c+dx)+f^2x^2}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)**3/(f*x+e)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral(sec(c + d*x)**3/(e**2*sin(c + d*x) + e**2 + 2*e*f*x*sin(c + d*x) +
 2*e*f*x + f**2*x**2*sin(c + d*x) + f**2*x**2), x)/a
```

3.287 $\int \frac{(e+fx)^m \cos^4(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=449

$$\frac{e^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(m+1,-\frac{id(e+fx)}{f}\right)}{8ad}-\frac{i2^{-m-3}e^{2i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(m+1,-\frac{2id(e+fx)}{f}\right)}{ad}+\cdots$$

```
[Out] 1/2*(f*x+e)^(1+m)/a/f/(1+m)+1/8*exp(I*(c-d*e/f))*(f*x+e)^m*GAMMA(1+m,-I*d*(
f*x+e)/f)/a/d/((-I*d*(f*x+e)/f)^m)+1/8*(f*x+e)^m*GAMMA(1+m,I*d*(f*x+e)/f)/a
/d/exp(I*(c-d*e/f))/((I*d*(f*x+e)/f)^m)-I*2^(-3-m)*exp(2*I*(c-d*e/f))*(f*x+
e)^m*GAMMA(1+m,-2*I*d*(f*x+e)/f)/a/d/((-I*d*(f*x+e)/f)^m)+I*2^(-3-m)*(f*x+e
)^m*GAMMA(1+m,2*I*d*(f*x+e)/f)/a/d/exp(2*I*(c-d*e/f))/((I*d*(f*x+e)/f)^m)+1
/8*3^(-1-m)*exp(3*I*(c-d*e/f))*(f*x+e)^m*GAMMA(1+m,-3*I*d*(f*x+e)/f)/a/d/((
-I*d*(f*x+e)/f)^m)+1/8*3^(-1-m)*(f*x+e)^m*GAMMA(1+m,3*I*d*(f*x+e)/f)/a/d/ex
p(3*I*(c-d*e/f))/((I*d*(f*x+e)/f)^m)
```

Rubi [A] time = 0.64, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4523, 3312, 3307, 2181, 4406, 3308}

$$\frac{e^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\text{Gamma}\left(m+1,-\frac{id(e+fx)}{f}\right)}{8ad}-\frac{i2^{-m-3}e^{2i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\text{Gamma}\left(m+\cdots\right.}{ad}\cdots$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^m*Cos[c + d*x]^4)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (e + f*x)^(1 + m)/(2*a*f*(1 + m)) + (E^(I*(c - (d*e)/f))*(e + f*x)^m*Gamma[
1 + m, ((-I)*d*(e + f*x))/f])/(8*a*d*(((-I)*d*(e + f*x))/f)^m) + ((e + f*x)
^m*Gamma[1 + m, (I*d*(e + f*x))/f])/(8*a*d*E^(I*(c - (d*e)/f))*((I*d*(e + f
*x))/f)^m) - (I*2^(-3 - m)*E^((2*I)*(c - (d*e)/f))*(e + f*x)^m*Gamma[1 + m,
 ((-2*I)*d*(e + f*x))/f])/(a*d*(((-I)*d*(e + f*x))/f)^m) + (I*2^(-3 - m)*(e
 + f*x)^m*Gamma[1 + m, ((2*I)*d*(e + f*x))/f])/(a*d*E^((2*I)*(c - (d*e)/f))
*((I*d*(e + f*x))/f)^m) + (3^(-1 - m)*E^((3*I)*(c - (d*e)/f))*(e + f*x)^m*G
amma[1 + m, ((-3*I)*d*(e + f*x))/f])/(8*a*d*(((-I)*d*(e + f*x))/f)^m) + (3^
(-1 - m)*(e + f*x)^m*Gamma[1 + m, ((3*I)*d*(e + f*x))/f])/(8*a*d*E^((3*I)*(
c - (d*e)/f))*((I*d*(e + f*x))/f)^m)
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
```

```
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 3312

```
Int[((c_.) + (d_.)*(x_))^(m_)*sin[(e_.) + (f_.)*(x_)]^(n_), x_Symbol] :> In
t[ExpandTrigReduce[(c + d*x)^m, Sin[e + f*x]^n, x], x] /; FreeQ[{c, d, e, f
, m}, x] && IGtQ[n, 1] && ( !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 1]))
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^m\cos^4(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^m\cos^2(c+dx)\,dx}{a} - \frac{\int (e+fx)^m\cos^2(c+dx)\sin(c+dx)\,dx}{a}$$
$$= \frac{\int \left(\frac{1}{2}(e+fx)^m + \frac{1}{2}(e+fx)^m\cos(2c+2dx)\right)dx}{a} - \frac{\int \left(\frac{1}{4}(e+fx)^m\sin(c+dx) + \frac{1}{4}(\right.}{a}$$
$$= \frac{(e+fx)^{1+m}}{2af(1+m)} - \frac{\int (e+fx)^m\sin(c+dx)\,dx}{4a} - \frac{\int (e+fx)^m\sin(3c+3dx)\,dx}{4a} + \frac{\int (e+}{}$$
$$= \frac{(e+fx)^{1+m}}{2af(1+m)} - \frac{i\int e^{-i(c+dx)}(e+fx)^m\,dx}{8a} + \frac{i\int e^{i(c+dx)}(e+fx)^m\,dx}{8a} - \frac{i\int e^{-i(3c+3dx)}(}{8a}$$
$$= \frac{(e+fx)^{1+m}}{2af(1+m)} + \frac{e^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(1+m,-\frac{id(e+fx)}{f}\right)}{8ad} + \frac{e^{-i\left(c-\frac{de}{f}\right)}(e+}{}$$

Mathematica [A] time = 4.79, size = 405, normalized size = 0.90

$$\frac{i(e+fx)^m\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)^2\left(-3ie^{i\left(c-\frac{de}{f}\right)}\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(m+1,-\frac{id(e+fx)}{f}\right)-3\,2^{-m}e^{2i\left(c-\frac{de}{f}\right)}\left(-\frac{i}{}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^m*Cos[c + d*x]^4)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((I/24)*(e + f*x)^m*(((-12*I)*d*(e + f*x))/(f*(1 + m)) - ((3*I)*E^(I*(c - (
d*e)/f))*Gamma[1 + m, ((-I)*d*(e + f*x))/f])/(((-I)*d*(e + f*x))/f)^m - ((3
*I)*Gamma[1 + m, (I*d*(e + f*x))/f])/(E^(I*(c - (d*e)/f))*((I*d*(e + f*x))/
f)^m) - (3*E^((2*I)*(c - (d*e)/f))*Gamma[1 + m, ((-2*I)*d*(e + f*x))/f])/(2
^m*(((-I)*d*(e + f*x))/f)^m) + (3*Gamma[1 + m, ((2*I)*d*(e + f*x))/f])/(2^m
*E^((2*I)*(c - (d*e)/f))*((I*d*(e + f*x))/f)^m) - (I*E^((3*I)*(c - (d*e)/f)
)*Gamma[1 + m, ((-3*I)*d*(e + f*x))/f])/(3^m*(((-I)*d*(e + f*x))/f)^m) - (I
*Gamma[1 + m, ((3*I)*d*(e + f*x))/f])/(3^m*E^((3*I)*(c - (d*e)/f))*((I*d*(e
 + f*x))/f)^m))*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^2)/(a*d*(1 + Sin[c +
d*x]))
```

fricas [A] time = 0.50, size = 334, normalized size = 0.74

$$\frac{\left(fm+f\right)e^{\left(-\frac{fm\log\left(\frac{3id}{f}\right)-3ide+3icf}{f}\right)}\Gamma\left(m+1,\frac{3idfx+3ide}{f}\right)+\left(3ifm+3if\right)e^{\left(-\frac{fm\log\left(\frac{2id}{f}\right)-2ide+2icf}{f}\right)}\Gamma\left(m+1,\frac{2idfx+2ide}{f}\right)+3\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)^4/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/24*((f*m + f)*e^(-(f*m*log(3*I*d/f) - 3*I*d*e + 3*I*c*f)/f)*gamma(m + 1,
(3*I*d*f*x + 3*I*d*e)/f) + (3*I*f*m + 3*I*f)*e^(-(f*m*log(2*I*d/f) - 2*I*d*
e + 2*I*c*f)/f)*gamma(m + 1, (2*I*d*f*x + 2*I*d*e)/f) + 3*(f*m + f)*e^(-(f*
m*log(I*d/f) - I*d*e + I*c*f)/f)*gamma(m + 1, (I*d*f*x + I*d*e)/f) + 3*(f*m
 + f)*e^(-(f*m*log(-I*d/f) + I*d*e - I*c*f)/f)*gamma(m + 1, (-I*d*f*x - I*d
*e)/f) + (-3*I*f*m - 3*I*f)*e^(-(f*m*log(-2*I*d/f) + 2*I*d*e - 2*I*c*f)/f)*
gamma(m + 1, (-2*I*d*f*x - 2*I*d*e)/f) + (f*m + f)*e^(-(f*m*log(-3*I*d/f) +
 3*I*d*e - 3*I*c*f)/f)*gamma(m + 1, (-3*I*d*f*x - 3*I*d*e)/f) + 12*(d*f*x +
 d*e)*(f*x + e)^m)/(a*d*f*m + a*d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \cos(dx+c)^4}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)^4/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^m*cos(d*x + c)^4/(a*sin(d*x + c) + a), x)
```

maple [F] time = 0.33, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \left(\cos^4(dx+c)\right)}{a+a\sin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*cos(d*x+c)^4/(a+a*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^m*cos(d*x+c)^4/(a+a*sin(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \cos(dx+c)^4}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)^4/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^m*cos(d*x + c)^4/(a*sin(d*x + c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cos\left(c+d\,x\right)^4\,{\left(e+f\,x\right)}^m}{a+a\,\sin\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^4*(e + f*x)^m)/(a + a*sin(c + d*x)),x)
[Out] int((cos(c + d*x)^4*(e + f*x)^m)/(a + a*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\left(e+fx\right)^m\cos^4\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*cos(d*x+c)**4/(a+a*sin(d*x+c)),x)
[Out] Integral((e + f*x)**m*cos(c + d*x)**4/(sin(c + d*x) + 1), x)/a
```

3.288 $\int \frac{(e+fx)^m \cos^3(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=277

$$-\frac{ie^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(m+1,-\frac{id(e+fx)}{f}\right)}{2ad}+\frac{2^{-m-3}e^{2i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(m+1,-\frac{2id(e+fx)}{f}\right)}{ad}$$

```
[Out] -1/2*I*exp(I*(c-d*e/f))*(f*x+e)^m*GAMMA(1+m,-I*d*(f*x+e)/f)/a/d/((-I*d*(f*x
+e)/f)^m)+1/2*I*(f*x+e)^m*GAMMA(1+m,I*d*(f*x+e)/f)/a/d/exp(I*(c-d*e/f))/((I
*d*(f*x+e)/f)^m)+2^(-3-m)*exp(2*I*(c-d*e/f))*(f*x+e)^m*GAMMA(1+m,-2*I*d*(f*
x+e)/f)/a/d/((-I*d*(f*x+e)/f)^m)+2^(-3-m)*(f*x+e)^m*GAMMA(1+m,2*I*d*(f*x+e)
/f)/a/d/exp(2*I*(c-d*e/f))/((I*d*(f*x+e)/f)^m)
```

Rubi [A] time = 0.32, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4523, 3307, 2181, 4406, 12, 3308}

$$-\frac{ie^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\text{Gamma}\left(m+1,-\frac{id(e+fx)}{f}\right)}{2ad}+\frac{2^{-m-3}e^{2i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\text{Gamma}\left(m\right.}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^m*Cos[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] ((-I/2)*E^(I*(c - (d*e)/f))*(e + f*x)^m*Gamma[1 + m, ((-I)*d*(e + f*x))/f])
/(a*d*(((-I)*d*(e + f*x))/f)^m) + ((I/2)*(e + f*x)^m*Gamma[1 + m, (I*d*(e +
 f*x))/f])/(a*d*E^(I*(c - (d*e)/f))*((I*d*(e + f*x))/f)^m) + (2^(-3 - m)*E^
((2*I)*(c - (d*e)/f))*(e + f*x)^m*Gamma[1 + m, ((-2*I)*d*(e + f*x))/f])/(a*
d*(((-I)*d*(e + f*x))/f)^m) + (2^(-3 - m)*(e + f*x)^m*Gamma[1 + m, ((2*I)*d
*(e + f*x))/f])/(a*d*E^((2*I)*(c - (d*e)/f))*((I*d*(e + f*x))/f)^m)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3307

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Dist[I/2, Int[(c + d*x)^m/(E^(I*k*Pi)*E^(I*(e + f*x))), x], x] - Dist[
I/2, Int[(c + d*x)^m*E^(I*k*Pi)*E^(I*(e + f*x)), x], x] /; FreeQ[{c, d, e,
f, m}, x] && IntegerQ[2*k]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 4406

```
Int[Cos[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)]^(n_.), x_Symbol] :> Int[ExpandTrigReduce[(c + d*x)^m, Sin[a + b*x
]^n*Cos[a + b*x]^p, x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IG
tQ[p, 0]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^m \cos^3(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^m \cos(c+dx)\,dx}{a} - \frac{\int (e+fx)^m \cos(c+dx)\sin(c+dx)\,dx}{a}$$

$$= \frac{\int e^{-i(c+dx)}(e+fx)^m\,dx}{2a} + \frac{\int e^{i(c+dx)}(e+fx)^m\,dx}{2a} - \frac{\int \frac{1}{2}(e+fx)^m \sin(2c+2dx)\,d\ldots}{a}$$

$$= -\frac{ie^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(1+m,-\frac{id(e+fx)}{f}\right)}{2ad} + \frac{ie^{-i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(\frac{id(e+\ldots}{f}\right.}{2\ldots}$$

$$= -\frac{ie^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(1+m,-\frac{id(e+fx)}{f}\right)}{2ad} + \frac{ie^{-i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(\frac{id(e+\ldots}{f}\right.}{2\ldots}$$

$$= -\frac{ie^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(1+m,-\frac{id(e+fx)}{f}\right)}{2ad} + \frac{ie^{-i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(\frac{id(e+\ldots}{f}\right.}{2\ldots}$$

Mathematica [A] time = 2.55, size = 253, normalized size = 0.91

$$\frac{2^{-m-3}e^{-\frac{2i(cf+de)}{f}}(e+fx)^m\left(\frac{d^2(e+fx)^2}{f^2}\right)^{-m}\left(i2^{m+2}e^{i\left(c+\frac{3de}{f}\right)}\left(-\frac{id(e+fx)}{f}\right)^m\Gamma\left(m+1,\frac{id(e+fx)}{f}\right)-i2^{m+2}e^{i\left(3c+\frac{de}{f}\right)}\left(\frac{id(e+fx)}{f}\right)^m\Gamma\ldots\right.}{ad}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^m*Cos[c + d*x]^3)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (2^(-3 - m)*(e + f*x)^m*((-I)*2^(2 + m)*E^(I*(3*c + (d*e)/f))*((I*d*(e + f*
x))/f)^m*Gamma[1 + m, ((-I)*d*(e + f*x))/f] + I*2^(2 + m)*E^(I*(c + (3*d*e)
/f))*(((-I)*d*(e + f*x))/f)^m*Gamma[1 + m, (I*d*(e + f*x))/f] + E^((4*I)*c)
*((I*d*(e + f*x))/f)^m*Gamma[1 + m, ((-2*I)*d*(e + f*x))/f] + E^(((4*I)*d*e
)/f)*(((-I)*d*(e + f*x))/f)^m*Gamma[1 + m, ((2*I)*d*(e + f*x))/f]))/(a*d*E^
(((2*I)*(d*e + c*f))/f)*((d^2*(e + f*x)^2)/f^2)^m)
```

fricas [A] time = 0.46, size = 187, normalized size = 0.68

$$\frac{e^{\left(-\frac{fm\log\left(\frac{2id}{f}\right)-2ide+2icf}{f}\right)}\Gamma\left(m+1,\frac{2idfx+2ide}{f}\right)+4ie^{\left(-\frac{fm\log\left(\frac{id}{f}\right)-ide+icf}{f}\right)}\Gamma\left(m+1,\frac{idfx+ide}{f}\right)-4ie^{\left(-\frac{fm\log\left(-\frac{id}{f}\right)+ide-icf}{f}\right)}\Gamma\left(m\ldots\right.}{8ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

[Out] 1/8*(e^(-(f*m*log(2*I*d/f) - 2*I*d*e + 2*I*c*f)/f)*gamma(m + 1, (2*I*d*f*x + 2*I*d*e)/f) + 4*I*e^(-(f*m*log(I*d/f) - I*d*e + I*c*f)/f)*gamma(m + 1, (I *d*f*x + I*d*e)/f) - 4*I*e^(-(f*m*log(-I*d/f) + I*d*e - I*c*f)/f)*gamma(m + 1, (-I*d*f*x - I*d*e)/f) + e^(-(f*m*log(-2*I*d/f) + 2*I*d*e - 2*I*c*f)/f)* gamma(m + 1, (-2*I*d*f*x - 2*I*d*e)/f))/(a*d)

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\cos\left(dx+c\right)^{3}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^m*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="giac")

[Out] integrate((f*x + e)^m*cos(d*x + c)^3/(a*sin(d*x + c) + a), x)

maple [F] time = 0.34, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\left(\cos^{3}\left(dx+c\right)\right)}{a+a\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f*x+e)^m*cos(d*x+c)^3/(a+a*sin(d*x+c)),x)

[Out] int((f*x+e)^m*cos(d*x+c)^3/(a+a*sin(d*x+c)),x)

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\cos\left(dx+c\right)^{3}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)^m*cos(d*x+c)^3/(a+a*sin(d*x+c)),x, algorithm="maxima")

[Out] integrate((f*x + e)^m*cos(d*x + c)^3/(a*sin(d*x + c) + a), x)

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cos\left(c+d\,x\right)^{3}\,{\left(e+f\,x\right)}^{m}}{a+a\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*(e + f*x)^m)/(a + a*sin(c + d*x)),x)
[Out] int((cos(c + d*x)^3*(e + f*x)^m)/(a + a*sin(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*cos(d*x+c)**3/(a+a*sin(d*x+c)),x)
[Out] Timed out
```

3.289 $\int \frac{(e+fx)^m \cos^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=154

$$\frac{e^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(m+1,-\frac{id(e+fx)}{f}\right)}{2ad}+\frac{e^{-i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(m+1,\frac{id(e+fx)}{f}\right)}{2ad}+\frac{(e+fx)^{m+1}}{af(m+1)}$$

```
[Out] (f*x+e)^(1+m)/a/f/(1+m)+1/2*exp(I*(c-d*e/f))*(f*x+e)^m*GAMMA(1+m,-I*d*(f*x+
e)/f)/a/d/((-I*d*(f*x+e)/f)^m)+1/2*(f*x+e)^m*GAMMA(1+m,I*d*(f*x+e)/f)/a/d/e
xp(I*(c-d*e/f))/((I*d*(f*x+e)/f)^m)
```

Rubi [A] time = 0.18, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4523, 32, 3308, 2181}

$$\frac{e^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\text{Gamma}\left(m+1,-\frac{id(e+fx)}{f}\right)}{2ad}+\frac{e^{-i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(\frac{id(e+fx)}{f}\right)^{-m}\text{Gamma}\left(m+1,\frac{id(e+fx)}{f}\right)}{2ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^m*Cos[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (e + f*x)^(1 + m)/(a*f*(1 + m)) + (E^(I*(c - (d*e)/f))*(e + f*x)^m*Gamma[1
+ m, ((-I)*d*(e + f*x))/f])/(2*a*d*(((-I)*d*(e + f*x))/f)^m) + ((e + f*x)^m
*Gamma[1 + m, (I*d*(e + f*x))/f])/(2*a*d*E^(I*(c - (d*e)/f))*((I*d*(e + f*x
))/f)^m)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2181

```
Int[(F_)^((g_.)*((e_.) + (f_.)*(x_)))*((c_.) + (d_.)*(x_))^(m_), x_Symbol]
:> -Simp[(F^(g*(e - (c*f)/d))*(c + d*x)^FracPart[m]*Gamma[m + 1, (-((f*g*Lo
g[F])/d))*(c + d*x)])/(d*(-((f*g*Log[F])/d))^(IntPart[m] + 1)*(-((f*g*Log[F
]*(c + d*x))/d))^FracPart[m]), x] /; FreeQ[{F, c, d, e, f, g, m}, x] &&  !I
ntegerQ[m]
```

Rule 3308

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> Dist[I
/2, Int[(c + d*x)^m/E^(I*(e + f*x)), x], x] - Dist[I/2, Int[(c + d*x)^m*E^(
I*(e + f*x)), x], x] /; FreeQ[{c, d, e, f, m}, x]
```

Rule 4523

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[1/a, Int[(e + f*x)^m*Cos[c + d
*x]^(n - 2), x], x] - Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Sin[c
+ d*x], x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[n, 1] && EqQ[a^2
- b^2, 0]
```

Rubi steps

$$\int \frac{(e+fx)^m \cos^2(c+dx)}{a+a\sin(c+dx)}\,dx = \frac{\int (e+fx)^m\,dx}{a} - \frac{\int (e+fx)^m \sin(c+dx)\,dx}{a}$$

$$= \frac{(e+fx)^{1+m}}{af(1+m)} - \frac{i\int e^{-i(c+dx)}(e+fx)^m\,dx}{2a} + \frac{i\int e^{i(c+dx)}(e+fx)^m\,dx}{2a}$$

$$= \frac{(e+fx)^{1+m}}{af(1+m)} + \frac{e^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(-\frac{id(e+fx)}{f}\right)^{-m}\Gamma\left(1+m,-\frac{id(e+fx)}{f}\right)}{2ad} + \frac{e^{-i\left(c-\frac{de}{f}\right)}(e+$$

Mathematica [A] time = 0.98, size = 220, normalized size = 1.43

$$\frac{e^{i\left(c-\frac{de}{f}\right)}(e+fx)^m\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)^2\left(\frac{d^2(e+fx)^2}{f^2}\right)^{-m}\left(2d(e+fx)e^{-i\left(c-\frac{de}{f}\right)}\left(\frac{d^2(e+fx)^2}{f^2}\right)^m+f(m+1)e}{2adf(m+1)(\sin(c+dx)+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^m*Cos[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
```

```
[Out] (E^(I*(c - (d*e)/f))*(e + f*x)^m*((2*d*(e + f*x)*((d^2*(e + f*x)^2)/f^2)^m)
/E^(I*(c - (d*e)/f)) + f*(1 + m)*((I*d*(e + f*x))/f)^m*Gamma[1 + m, ((-I)*d
*(e + f*x))/f] + (f*(1 + m)*(((-I)*d*(e + f*x))/f)^m*Gamma[1 + m, (I*d*(e +
 f*x))/f])/E^((2*I)*(c - (d*e)/f)))*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])^2
)/(2*a*d*f*(1 + m)*((d^2*(e + f*x)^2)/f^2)^m*(1 + Sin[c + d*x]))
```

fricas [A] time = 0.49, size = 130, normalized size = 0.84

$$\frac{\left(fm+f\right)e^{\left(-\frac{fm\log\left(\frac{id}{f}\right)-ide+icf}{f}\right)}\Gamma\left(m+1,\frac{idfx+ide}{f}\right)+\left(fm+f\right)e^{\left(-\frac{fm\log\left(-\frac{id}{f}\right)+ide-icf}{f}\right)}\Gamma\left(m+1,\frac{-idfx-ide}{f}\right)+2\left(dfx+de\right)\left(\right.}{2\left(adfm+adf\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*((f*m + f)*e^(-(f*m*log(I*d/f) - I*d*e + I*c*f)/f)*gamma(m + 1, (I*d*f*
x + I*d*e)/f) + (f*m + f)*e^(-(f*m*log(-I*d/f) + I*d*e - I*c*f)/f)*gamma(m
+ 1, (-I*d*f*x - I*d*e)/f) + 2*(d*f*x + d*e)*(f*x + e)^m)/(a*d*f*m + a*d*f)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\cos\left(dx+c\right)^{2}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^m*cos(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

maple [F] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\left(\cos^{2}\left(dx+c\right)\right)}{a+a\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*cos(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^m*cos(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\cos\left(dx+c\right)^{2}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^m*cos(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\cos\left(c+d\,x\right)^2\,{\left(e+f\,x\right)}^m}{a+a\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*(e + f*x)^m)/(a + a*sin(c + d*x)),x)
[Out] int((cos(c + d*x)^2*(e + f*x)^m)/(a + a*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\left(e+fx\right)^{m}\cos^{2}\left(c+dx\right)}{\sin\left(c+dx\right)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*cos(d*x+c)**2/(a+a*sin(d*x+c)),x)
[Out] Integral((e + f*x)**m*cos(c + d*x)**2/(sin(c + d*x) + 1), x)/a
```

3.290 $\int \frac{(e+fx)^m \cos(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=29

$$\mathrm{Int}\left(\frac{\cos(c+dx)(e+fx)^m}{a\sin(c+dx)+a},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*cos(d*x+c)/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \cos(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Cos[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] Defer[Int][((e + f*x)^m*Cos[c + d*x])/(a + a*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \cos(c+dx)}{a+a\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \cos(c+dx)}{a+a\sin(c+dx)}\,dx$$

Mathematica [A] time = 8.30, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \cos(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Cos[c + d*x])/(a + a*Sin[c + d*x]),x]
```

```
[Out] Integrate[((e + f*x)^m*Cos[c + d*x])/(a + a*Sin[c + d*x]), x]
```

fricas [A] time = 0.48, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(fx+e\right)^m \cos\left(dx+c\right)}{a\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*cos(d*x + c)/(a*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \cos(dx+c)}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*cos(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.14, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \cos(dx+c)}{a+a\sin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*cos(d*x+c)/(a+a*sin(d*x+c)),x)
[Out] int((f*x+e)^m*cos(d*x+c)/(a+a*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \cos(dx+c)}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*cos(d*x + c)/(a*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cos(c+d\,x)\,(e+f\,x)^m}{a+a\,\sin(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x)^m)/(a + a*sin(c + d*x)),x)
[Out] int((cos(c + d*x)*(e + f*x)^m)/(a + a*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(e+fx)^m \cos(c+dx)}{\sin(c+dx)+1}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*cos(d*x+c)/(a+a*sin(d*x+c)),x)
[Out] Integral((e + f*x)**m*cos(c + d*x)/(sin(c + d*x) + 1), x)/a
```

3.291 $\int \frac{(e+fx)^m}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{(e+fx)^m}{a\sin(c+dx)+a},x\right)$$

```
[Out] Unintegrable((f*x+e)^m/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(e + f*x)^m/(a + a*Sin[c + d*x]),x]
```

```
[Out] Defer[Int][(e + f*x)^m/(a + a*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m}{a+a\sin(c+dx)}\,dx = \int \frac{(e+fx)^m}{a+a\sin(c+dx)}\,dx$$

Mathematica [A] time = 0.35, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(e + f*x)^m/(a + a*Sin[c + d*x]),x]
```

```
[Out] Integrate[(e + f*x)^m/(a + a*Sin[c + d*x]), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^m}{a\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((f*x + e)^m/(a*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^m/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}}{a+a\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m/(a+a*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^m/(a+a*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] integrate((f*x + e)^m/(a*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{{\left(e+f\,x\right)}^m}{a+a\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(a + a*sin(c + d*x)),x)
```

```
[Out] int((e + f*x)^m/(a + a*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{\left(e+fx\right)^{m}}{\sin\left(c+dx\right)+1}\, dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m/(sin(c + d*x) + 1), x)/a
```

3.292 $\int \frac{(e+fx)^m \sec(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\sec(c+dx)(e+fx)^m}{a\sin(c+dx)+a},x\right)$$

[Out] Unintegrable((f*x+e)^m*sec(d*x+c)/(a+a*sin(d*x+c)),x)

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \sec(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

[In] Int[((e + f*x)^m*Sec[c + d*x])/(a + a*Sin[c + d*x]),x]

[Out] Defer[Int][((e + f*x)^m*Sec[c + d*x])/(a + a*Sin[c + d*x]), x]

Rubi steps

$$\int \frac{(e+fx)^m \sec(c+dx)}{a+a\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \sec(c+dx)}{a+a\sin(c+dx)}\,dx$$

Mathematica [A] time = 164.93, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \sec(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

[In] Integrate[((e + f*x)^m*Sec[c + d*x])/(a + a*Sin[c + d*x]),x]

[Out] Integrate[((e + f*x)^m*Sec[c + d*x])/(a + a*Sin[c + d*x]), x]

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^{m}\sec\left(dx+c\right)}{a\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*sec(d*x + c)/(a*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \sec(dx+c)}{a\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*sec(d*x + c)/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m \sec(dx+c)}{a+a\sin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*sec(d*x+c)/(a+a*sin(d*x+c)),x)
[Out] int((f*x+e)^m*sec(d*x+c)/(a+a*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)/(a+a*sin(d*x+c)),x, algorithm="maxima")
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(e+f\,x)^m}{\cos(c+d\,x)\,\left(a+a\,\sin(c+d\,x)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(cos(c + d*x)*(a + a*sin(c + d*x))),x)
[Out] int((e + f*x)^m/(cos(c + d*x)*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(e+fx)^m \sec(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*sec(d*x+c)/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m*sec(c + d*x)/(sin(c + d*x) + 1), x)/a
```

3.293 $\int \frac{(e+fx)^m \sec^2(c+dx)}{a+a\sin(c+dx)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sec^2(c+dx)(e+fx)^m}{a\sin(c+dx)+a},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*sec(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \sec^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Sec[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
[Out] Defer[Int][((e + f*x)^m*Sec[c + d*x]^2)/(a + a*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \sec^2(c+dx)}{a+a\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \sec^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

Mathematica [A] time = 27.33, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \sec^2(c+dx)}{a+a\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Sec[c + d*x]^2)/(a + a*Sin[c + d*x]),x]
[Out] Integrate[((e + f*x)^m*Sec[c + d*x]^2)/(a + a*Sin[c + d*x]), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^m \sec\left(dx+c\right)^2}{a\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((f*x + e)^m*sec(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\sec\left(dx+c\right)^{2}}{a\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^m*sec(d*x + c)^2/(a*sin(d*x + c) + a), x)
```

maple [A] time = 0.26, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\left(\sec^{2}\left(dx+c\right)\right)}{a+a\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*sec(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^m*sec(d*x+c)^2/(a+a*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)^2/(a+a*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(e+f\,x\right)^{m}}{\cos\left(c+d\,x\right)^{2}\,\left(a+a\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(cos(c + d*x)^2*(a + a*sin(c + d*x))),x)
```

```
[Out] int((e + f*x)^m/(cos(c + d*x)^2*(a + a*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\int \frac{(e+fx)^m \sec^2(c+dx)}{\sin(c+dx)+1}\,dx}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*sec(d*x+c)**2/(a+a*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m*sec(c + d*x)**2/(sin(c + d*x) + 1), x)/a
```

3.294 $\int \frac{(e+fx)^3 \cos(c+dx)}{a+b\sin(c+dx)} \, dx$

Optimal. Leaf size=432

$$\frac{6if^3\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^4}+\frac{6if^3\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^4}+\frac{6f^2(e+fx)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3}+\frac{6f^2(e+fx)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^3}-\frac{3if(e+fx)^2\mathrm{I}}{b}$$

```
[Out] -1/4*I*(f*x+e)^4/b/f+(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))
/b/d+(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d-3*I*f*(f*x+
e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^2-3*I*f*(f*x+e)^
2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^2+6*f^2*(f*x+e)*pol
ylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^3+6*f^2*(f*x+e)*polylog(
3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^3+6*I*f^3*polylog(4,I*b*exp(I
*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^4+6*I*f^3*polylog(4,I*b*exp(I*(d*x+c))/(
a+(a^2-b^2)^(1/2)))/b/d^4
```

Rubi [A] time = 0.61, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {4519, 2190, 2531, 6609, 2282, 6589}

$$\frac{6f^2(e+fx)\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3}+\frac{6f^2(e+fx)\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^3}-\frac{3if(e+fx)^2\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2}-\frac{3i}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I/4)*(e + f*x)^4)/(b*f) + ((e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a
- Sqrt[a^2 - b^2])])/(b*d) + ((e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a
+ Sqrt[a^2 - b^2])])/(b*d) - ((3*I)*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c +
 d*x)))/(a - Sqrt[a^2 - b^2])])/(b*d^2) - ((3*I)*f*(e + f*x)^2*PolyLog[2, (
I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*d^2) + (6*f^2*(e + f*x)*Pol
yLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*d^3) + (6*f^2*(e +
 f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*d^3) + ((
6*I)*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*d^4) +
 ((6*I)*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*d^4
)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos(c+dx)}{a+b\sin(c+dx)}\,dx = -\frac{i(e+fx)^4}{4bf} + \int \frac{e^{i(c+dx)}(e+fx)^3}{a-\sqrt{a^2-b^2}-ibe^{i(c+dx)}}\,dx + \int \frac{e^{i(c+dx)}(e+fx)^3}{a+\sqrt{a^2-b^2}-ibe^{i(c+dx)}}\,dx$$

$$= -\frac{i(e+fx)^4}{4bf} + \frac{(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{(3f)}{}$$

$$= -\frac{i(e+fx)^4}{4bf} + \frac{(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{3if(e}{}$$

$$= -\frac{i(e+fx)^4}{4bf} + \frac{(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{3if(e}{}$$

$$= -\frac{i(e+fx)^4}{4bf} + \frac{(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{3if(e}{}$$

$$= -\frac{i(e+fx)^4}{4bf} + \frac{(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{3if(e}{}$$

Mathematica [A] time = 0.19, size = 410, normalized size = 0.95

$$\frac{\frac{12f\left(2f\left(d(e+fx)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)+if\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)\right)-id^2(e+fx)^2\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)\right)}{d^4} + \frac{12f\left(2f\left(d(e+fx)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)+if\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)\right)-id^2(e+fx)}{d^4}}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (((-I)*(e + f*x)^4)/f + (4*(e + f*x)^3*Log[1 + (I*b*E^(I*(c + d*x)))/(-a +
Sqrt[a^2 - b^2])])/d + (4*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sq
rt[a^2 - b^2])])/d + (12*f*((-I)*d^2*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c +
d*x)))/(a - Sqrt[a^2 - b^2])] + 2*f*(d*(e + f*x)*PolyLog[3, (I*b*E^(I*(c +
d*x)))/(a - Sqrt[a^2 - b^2])] + I*f*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - S
qrt[a^2 - b^2])])))/d^4 + (12*f*((-I)*d^2*(e + f*x)^2*PolyLog[2, (I*b*E^(I*
(c + d*x)))/(a + Sqrt[a^2 - b^2])] + 2*f*(d*(e + f*x)*PolyLog[3, (I*b*E^(I*
(c + d*x)))/(a + Sqrt[a^2 - b^2])] + I*f*PolyLog[4, (I*b*E^(I*(c + d*x)))/(
a + Sqrt[a^2 - b^2])])))/d^4)/(4*b)
```

fricas [C] time = 0.64, size = 1793, normalized size = 4.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(6*I*f^3*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*c
os(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6*I*f^3*polylo
g(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*s
in(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*I*f^3*polylog(4, 1/2*(-2*I*a*co
s(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2))/b) - 6*I*f^3*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*s
in(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))
/b) + (3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3*I*d^2*e^2*f)*dilog(-1/2*(2*I*a
*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sq
rt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (3*I*d^2*f^3*x^2 + 6*I*d^2*e*f^2*x + 3
*I*d^2*e^2*f)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(
d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-3*I*d
^2*f^3*x^2 - 6*I*d^2*e*f^2*x - 3*I*d^2*e^2*f)*dilog(-1/2*(-2*I*a*cos(d*x +
c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
b^2)/b^2) + 2*b)/b + 1) + (-3*I*d^2*f^3*x^2 - 6*I*d^2*e*f^2*x - 3*I*d^2*e^2
*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c)
+ I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (d^3*e^3 - 3*c*d
^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x +
c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2
*d*e*f^2 - c^3*f^3)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(
a^2 - b^2)/b^2) - 2*I*a) + (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f
^3)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2)
 + 2*I*a) + (d^3*e^3 - 3*c*d^2*e^2*f + 3*c^2*d*e*f^2 - c^3*f^3)*log(-2*b*co
s(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + (d^
3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2
 + c^3*f^3)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x +
 c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (d^3*f^3*x^3 + 3
*d^3*e*f^2*x^2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*l
og(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin
(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^
2 + 3*d^3*e^2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*log(1/2*(-2*I*
a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (d^3*f^3*x^3 + 3*d^3*e*f^2*x^2 + 3*d^3*e^
2*f*x + 3*c*d^2*e^2*f - 3*c^2*d*e*f^2 + c^3*f^3)*log(1/2*(-2*I*a*cos(d*x +
c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
b^2)/b^2) + 2*b)/b) + 6*(d*f^3*x + d*e*f^2)*polylog(3, 1/2*(2*I*a*cos(d*x +
 c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
 b^2)/b^2))/b) + 6*(d*f^3*x + d*e*f^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) -
 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2))/b) + 6*(d*f^3*x + d*e*f^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a
*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
```

```
))/b) + 6*(d*f^3*x + d*e*f^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin
(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b
))/(b*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^3\cos\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cos(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [F] time = 2.12, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^3\cos\left(dx+c\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cos\left(c+d\,x\right)\,{\left(e+f\,x\right)}^3}{a+b\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] int((cos(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.295 $\int \frac{(e+fx)^2\cos(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=320

$$\frac{2f^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3}+\frac{2f^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^3}-\frac{2if(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2}-\frac{2if(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^2}+\frac{(e+fx)^2\log(1}{bd}$$

```
[Out] -1/3*I*(f*x+e)^3/b/f+(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))
/b/d+(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d-2*I*f*(f*x+
e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^2-2*I*f*(f*x+e)*po
lylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^2+2*f^2*polylog(3,I*b*e
xp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^3+2*f^2*polylog(3,I*b*exp(I*(d*x+c))
/(a+(a^2-b^2)^(1/2)))/b/d^3
```

Rubi [A] time = 0.51, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {4519, 2190, 2531, 2282, 6589}

$$-\frac{2if(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2}-\frac{2if(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^2}+\frac{2f^2\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3}+\frac{2f^2\text{PolyL}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I/3)*(e + f*x)^3)/(b*f) + ((e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a
- Sqrt[a^2 - b^2])])/(b*d) + ((e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a
+ Sqrt[a^2 - b^2])])/(b*d) - ((2*I)*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d
*x)))/(a - Sqrt[a^2 - b^2])])/(b*d^2) - ((2*I)*f*(e + f*x)*PolyLog[2, (I*b*
E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*d^2) + (2*f^2*PolyLog[3, (I*b*E
^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*d^3) + (2*f^2*PolyLog[3, (I*b*E^
(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos(c+dx)}{a+b\sin(c+dx)}\,dx = -\frac{i(e+fx)^3}{3bf} + \int \frac{e^{i(c+dx)}(e+fx)^2}{a-\sqrt{a^2-b^2}-ibe^{i(c+dx)}}\,dx + \int \frac{e^{i(c+dx)}(e+fx)^2}{a+\sqrt{a^2-b^2}-ibe^{i(c+dx)}}\,dx$$

$$= -\frac{i(e+fx)^3}{3bf} + \frac{(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{(2f)}{}$$

$$= -\frac{i(e+fx)^3}{3bf} + \frac{(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{2if(e}{}$$

$$= -\frac{i(e+fx)^3}{3bf} + \frac{(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{2if(e}{}$$

$$= -\frac{i(e+fx)^3}{3bf} + \frac{(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{2if(e}{}$$

Mathematica [A] time = 0.16, size = 302, normalized size = 0.94

$$\frac{\frac{6f\left(f\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)-id(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)\right)}{d^3} + \frac{6f\left(f\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)-id(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)\right)}{d^3} + \frac{3(e+fx)^2\log\left(1+\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}-a}\right)}{d} + \frac{3(e+fx)^2\log(}{}}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (((-I)*(e + f*x)^3)/f + (3*(e + f*x)^2*Log[1 + (I*b*E^(I*(c + d*x)))/(-a +
Sqrt[a^2 - b^2])])/d + (3*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sq
rt[a^2 - b^2])])/d + (6*f*((-I)*d*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x))
)/(a - Sqrt[a^2 - b^2])] + f*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2
 - b^2])]))/d^3 + (6*f*((-I)*d*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(
a + Sqrt[a^2 - b^2])] + f*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 -
b^2])]))/d^3)/(3*b)
```

fricas [C] time = 0.58, size = 1245, normalized size = 3.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*f^2*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos
(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*f^2*polylog(3,
 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*f^2*polylog(3, 1/2*(-2*I*a*cos(d*x
+ c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2
- b^2)/b^2))/b) + 2*f^2*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x +
 c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + (2
*I*d*f^2*x + 2*I*d*e*f)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) +
 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)
 + (2*I*d*f^2*x + 2*I*d*e*f)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
 c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
 + 1) + (-2*I*d*f^2*x - 2*I*d*e*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*si
n(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) +
 2*b)/b + 1) + (-2*I*d*f^2*x - 2*I*d*e*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) +
 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2) + 2*b)/b + 1) + (d^2*e^2 - 2*c*d*e*f + c^2*f^2)*log(2*b*cos(d*x + c)
+ 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + (d^2*e^2 - 2*c
*d*e*f + c^2*f^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^
2 - b^2)/b^2) - 2*I*a) + (d^2*e^2 - 2*c*d*e*f + c^2*f^2)*log(-2*b*cos(d*x +
 c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + (d^2*e^2 -
 2*c*d*e*f + c^2*f^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt
(-(a^2 - b^2)/b^2) - 2*I*a) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*
f^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I
*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (d^2*f^2*x^2 + 2*d^2*e*
f*x + 2*c*d*e*f - c^2*f^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) -
 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (
d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*log(1/2*(-2*I*a*cos(d*x +
c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
b^2)/b^2) + 2*b)/b) + (d^2*f^2*x^2 + 2*d^2*e*f*x + 2*c*d*e*f - c^2*f^2)*log
(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(
d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b))/(b*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\cos\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cos(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [F] time = 1.55, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \cos \left(dx+c\right)}{a+b\sin \left(dx+c\right)}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cos\left(c+d\,x\right)\,{\left(e+f\,x\right)}^2}{a+b\,\sin\left(c+d\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
```

```
[Out] int((cos(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + f x\right)^{2} \cos{\left(c + d x \right)}}{a + b \sin{\left(c + d x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*cos(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.296 $\int \frac{(e+fx)\cos(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=212

$$-\frac{if\,\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2}-\frac{if\,\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^2}+\frac{(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd}+\frac{(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd}-\frac{i(e+fx)^2}{2bf}$$

```
[Out] -1/2*I*(f*x+e)^2/b/f+(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b
/d+(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d-I*f*polylog(2,I
*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^2-I*f*polylog(2,I*b*exp(I*(d*x+c
))/(a+(a^2-b^2)^(1/2)))/b/d^2
```

Rubi [A] time = 0.28, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4519, 2190, 2279, 2391}

$$-\frac{if\,\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2}-\frac{if\,\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^2}+\frac{(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd}+\frac{(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I/2)*(e + f*x)^2)/(b*f) + ((e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a -
Sqrt[a^2 - b^2])])/(b*d) + ((e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sq
rt[a^2 - b^2])])/(b*d) - (I*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^
2 - b^2])])/(b*d^2) - (I*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 -
 b^2])])/(b*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rubi steps

$$\int \frac{(e+fx)\cos(c+dx)}{a+b\sin(c+dx)}\,dx = -\frac{i(e+fx)^2}{2bf} + \int \frac{e^{i(c+dx)}(e+fx)}{a-\sqrt{a^2-b^2}-ibe^{i(c+dx)}}\,dx + \int \frac{e^{i(c+dx)}(e+fx)}{a+\sqrt{a^2-b^2}-ibe^{i(c+dx)}}\,dx$$

$$= -\frac{i(e+fx)^2}{2bf} + \frac{(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{f\int \log(}{}$$

$$= -\frac{i(e+fx)^2}{2bf} + \frac{(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} + \frac{(if)\,\mathrm{Sub}}{}$$

$$= -\frac{i(e+fx)^2}{2bf} + \frac{(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd} + \frac{(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd} - \frac{if\mathrm{Li}_2\left(\frac{i}{a}\right)}{b}$$

Mathematica [A] time = 0.05, size = 197, normalized size = 0.93

$$-\frac{i\left(d(e+fx)\left(2if\log\left(1+\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}-a}\right)+2if\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)+de+dfx\right)+2f^2\mathrm{Li}_2\left(-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}-a}\right)+2f^2\mathrm{Li}_2\left(\frac{ibe^{i(}}{a+\sqrt{}}\right)\right.}{2bd^2f}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cos[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-1/2*I)*(d*(e + f*x)*(d*e + d*f*x + (2*I)*f*Log[1 + (I*b*E^(I*(c + d*x)))
/(-a + Sqrt[a^2 - b^2])] + (2*I)*f*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[
a^2 - b^2])]) + 2*f^2*PolyLog[2, ((-I)*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 -
```

```
b^2])] + 2*f^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])]))/(b
*d^2*f)
```

fricas [B] time = 0.63, size = 781, normalized size = 3.68

$$i f \mathrm{Li}_2\left(-\frac{2i a \cos(dx+c)+2 a \sin(dx+c)+2 (b \cos(dx+c)-i b \sin(dx+c))\sqrt{-\frac{a^2-b^2}{b^2}}+2 b}{2 b}+1\right)+i f \mathrm{Li}_2\left(-\frac{2i a \cos(dx+c)+2 a \sin(dx+c)-2 (b \cos(dx}{2 b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(I*f*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x +
 c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + I*f*dilog(-1
/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - I*f*dilog(-1/2*(-2*I*a*cos(d*
x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^
2 - b^2)/b^2) + 2*b)/b + 1) - I*f*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin
(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) +
2*b)/b + 1) + (d*e - c*f)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*s
qrt(-(a^2 - b^2)/b^2) + 2*I*a) + (d*e - c*f)*log(2*b*cos(d*x + c) - 2*I*b*s
in(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + (d*e - c*f)*log(-2*b*co
s(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + (d*
e - c*f)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)
/b^2) - 2*I*a) + (d*f*x + c*f)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)
 + (d*f*x + c*f)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(
d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (d*f*x + c*
f)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*
b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (d*f*x + c*f)*log(1/2*(-
2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c
))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b))/(b*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\cos\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cos(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [B] time = 0.24, size = 1006, normalized size = 4.75

$$-\frac{ifc^2}{d^2b}+\frac{iex}{b}+\frac{if\,\mathrm{dilog}\left(\frac{ia+b\,e^{i(dx+c)}+\sqrt{-a^2+b^2}}{ia+\sqrt{-a^2+b^2}}\right)a^2}{d^2b\left(-a^2+b^2\right)}-\frac{ibf\,\mathrm{dilog}\left(\frac{ia+b\,e^{i(dx+c)}+\sqrt{-a^2+b^2}}{ia+\sqrt{-a^2+b^2}}\right)}{d^2\left(-a^2+b^2\right)}+\frac{bf\ln\left(\frac{ia+b\,e^{i(dx+c)}-\sqrt{-a^2+b^2}}{ia-\sqrt{-a^2+b^2}}\right)x}{d\left(-a^2+b^2\right)}+\frac{bf}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] -I/d^2*b*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-
a^2+b^2)^(1/2)))-I/d^2*b*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2
)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-I/d^2/b*f*c^2+I/b*e*x+1/d*b*f/(-a^2+b^2)*l
n((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x+1/d^2*b
*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1
/2)))*c-1/2*I/b*f*x^2+1/d*b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2
)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x+1/d^2*b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*
x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-1/d/b*f/(-a^2+b^2)*ln((I*
a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*a^2*x-1/d^2/b*
f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/
2)))*a^2*c+1/d/b*e*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)-1/d/b*f/
(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)
))*a^2*x-1/d^2/b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I
*a+(-a^2+b^2)^(1/2)))*a^2*c-2/d/b*ln(exp(I*(d*x+c)))*e+I/d^2/b*f/(-a^2+b^2)
*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a^2+
I/d^2/b*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a
^2+b^2)^(1/2)))*a^2-2*I/d/b*f*c*x-1/d^2/b*f*c*ln(I*b*exp(2*I*(d*x+c))-2*a*e
xp(I*(d*x+c))-I*b)+2/d^2/b*f*c*ln(exp(I*(d*x+c)))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cos(c+d\,x)\,\left(e+f\,x\right)}{a+b\,\sin(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x))/(a + b*sin(c + d*x)),x)
[Out] int((cos(c + d*x)*(e + f*x))/(a + b*sin(c + d*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)\cos(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)*cos(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.297 $\int \frac{\cos(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=18

$$\frac{\log(a+b\sin(c+dx))}{bd}$$

```
[Out] ln(a+b*sin(d*x+c))/b/d
```

Rubi [A] time = 0.03, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {2668, 31}

$$\frac{\log(a+b\sin(c+dx))}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[c + d*x]/(a + b*Sin[c + d*x]),x]
```

```
[Out] Log[a + b*Sin[c + d*x]]/(b*d)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\cos(c+dx)}{a+b\sin(c+dx)}\,dx &= \frac{\text{Subst}\left(\int \frac{1}{a+x}\,dx, x, b\sin(c+dx)\right)}{bd}\\ &= \frac{\log(a+b\sin(c+dx))}{bd}\end{aligned}$$

Mathematica [A] time = 0.01, size = 18, normalized size = 1.00

$$\frac{\log(a+b\sin(c+dx))}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[c + d*x]/(a + b*Sin[c + d*x]),x]
```

```
[Out] Log[a + b*Sin[c + d*x]]/(b*d)
```

fricas [A] time = 0.48, size = 18, normalized size = 1.00

$$\frac{\log\left(b\sin\left(dx+c\right)+a\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] log(b*sin(d*x + c) + a)/(b*d)
```

giac [A] time = 0.31, size = 19, normalized size = 1.06

$$\frac{\log\left(|b\sin\left(dx+c\right)+a|\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] log(abs(b*sin(d*x + c) + a))/(b*d)
```

maple [A] time = 0.00, size = 19, normalized size = 1.06

$$\frac{\ln\left(a+b\sin\left(dx+c\right)\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] ln(a+b*sin(d*x+c))/b/d
```

maxima [A] time = 0.78, size = 18, normalized size = 1.00

$$\frac{\log\left(b\sin\left(dx+c\right)+a\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] log(b*sin(d*x + c) + a)/(b*d)
```

mupad [B] time = 0.06, size = 18, normalized size = 1.00

$$\frac{\ln\left(a+b\,\sin\left(c+d\,x\right)\right)}{b\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)/(a + b*sin(c + d*x)),x)
```

```
[Out] log(a + b*sin(c + d*x))/(b*d)
```

sympy [A] time = 0.62, size = 41, normalized size = 2.28

$$\begin{cases} \frac{x\cos(c)}{a} & \text{for } b = 0 \wedge d = 0 \\ \frac{x\cos(c)}{a+b\sin(c)} & \text{for } d = 0 \\ \frac{\sin(c+dx)}{ad} & \text{for } b = 0 \\ \frac{\log\left(\frac{a}{b}+\sin(c+dx)\right)}{bd} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Piecewise((x*cos(c)/a, Eq(b, 0) & Eq(d, 0)), (x*cos(c)/(a + b*sin(c)), Eq(d
, 0)), (sin(c + d*x)/(a*d), Eq(b, 0)), (log(a/b + sin(c + d*x))/(b*d), True
))
```

3.298 $\int \frac{(e+fx)^3\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=618

$$-\frac{6f^3\sqrt{a^2-b^2}\,\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^4}+\frac{6f^3\sqrt{a^2-b^2}\,\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^2d^4}+\frac{6if^2\sqrt{a^2-b^2}\,(e+fx)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^3}-\frac{6if^2\sqrt{a^2-b}}{}$$

```
[Out] 1/4*a*(f*x+e)^4/b^2/f-6*f^2*(f*x+e)*cos(d*x+c)/b/d^3+(f*x+e)^3*cos(d*x+c)/b
/d+6*f^3*sin(d*x+c)/b/d^4-3*f*(f*x+e)^2*sin(d*x+c)/b/d^2+I*(f*x+e)^3*ln(1-I
*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d-I*(f*x+e)^3*ln
(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d+3*f*(f*x+e
)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d
^2-3*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2
)^(1/2)/b^2/d^2+6*I*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(
1/2)))*(a^2-b^2)^(1/2)/b^2/d^3-6*I*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))
/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d^3-6*f^3*polylog(4,I*b*exp(I*(d*
x+c))/(a-(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d^4+6*f^3*polylog(4,I*b*exp(
I*(d*x+c))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d^4
```

Rubi [A] time = 1.07, antiderivative size = 618, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 11, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.393, Rules used = {4525, 32, 3296, 2637, 3323, 2264, 2190, 2531, 6609, 2282, 6589}

$$\frac{6if^2\sqrt{a^2-b^2}\,(e+fx)\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^3}-\frac{6if^2\sqrt{a^2-b^2}\,(e+fx)\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^2d^3}+\frac{3f\sqrt{a^2-b^2}\,(e+f}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (a*(e + f*x)^4)/(4*b^2*f) - (6*f^2*(e + f*x)*Cos[c + d*x])/(b*d^3) + ((e +
f*x)^3*Cos[c + d*x])/(b*d) + (I*Sqrt[a^2 - b^2]*(e + f*x)^3*Log[1 - (I*b*E^
(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^2*d) - (I*Sqrt[a^2 - b^2]*(e + f*
x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*d) + (3*Sqr
t[a^2 - b^2]*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 -
 b^2])])/(b^2*d^2) - (3*Sqrt[a^2 - b^2]*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*
(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*d^2) + ((6*I)*Sqrt[a^2 - b^2]*f^2*
(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^2*d^3
) - ((6*I)*Sqrt[a^2 - b^2]*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(
a + Sqrt[a^2 - b^2])])/(b^2*d^3) - (6*Sqrt[a^2 - b^2]*f^3*PolyLog[4, (I*b*E
^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^2*d^4) + (6*Sqrt[a^2 - b^2]*f^3*
```

```
PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*d^4) + (6*f^3
*Sin[c + d*x])/(b*d^4) - (3*f*(e + f*x)^2*Sin[c + d*x])/(b*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{a\int (e+fx)^3\,dx}{b^2} - \frac{\int (e+fx)^3\sin(c+dx)\,dx}{b} - \frac{\left(a^2-b^2\right)\int \frac{(e+fx)^3}{a+b\sin(c+dx)}\,dx}{b^2}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{(e+fx)^3\cos(c+dx)}{bd} - \frac{\left(2\left(a^2-b^2\right)\right)\int \frac{e^{i(c+dx)}(e+fx)^3}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b^2} - \frac{(3f}{}$$

$$= \frac{a(e+fx)^4}{4b^2f} + \frac{(e+fx)^3\cos(c+dx)}{bd} - \frac{3f(e+fx)^2\sin(c+dx)}{bd^2} + \frac{\left(2i\sqrt{a^2-b^2}\right)\int}{}$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} + \frac{(e+fx)^3\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+f}{}$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} + \frac{(e+fx)^3\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+f}{}$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} + \frac{(e+fx)^3\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+f}{}$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} + \frac{(e+fx)^3\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+f}{}$$

$$= \frac{a(e+fx)^4}{4b^2f} - \frac{6f^2(e+fx)\cos(c+dx)}{bd^3} + \frac{(e+fx)^3\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+f}{}$$

Mathematica [A] time = 3.51, size = 1025, normalized size = 1.66

$$\frac{ax\left(4e^3+6fxe^2+4f^2x^2e+f^3x^3\right)d^4+4b(e+fx)\left(d^2(e+fx)^2-6f^2\right)\cos(c+dx)d+\frac{4\left(b^2-a^2\right)\left(2\sqrt{b^2-a^2}\,e^3\tan^{-1}\left(\frac{ia+be^{i(}}{\sqrt{a^2-}}\right.\right.}{}}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (a*d^4*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3) + 4*b*d*(e + f*x)*(-6*
f^2 + d^2*(e + f*x)^2)*Cos[c + d*x] + (4*(-a^2 + b^2)*(2*Sqrt[-a^2 + b^2]*d
^3*e^3*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + 3*Sqrt[a^2 - b^2
]*d^3*e^2*f*x*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 3*
```

```
Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a
^2 + b^2])] + Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log[1 - (b*E^(I*(c + d*x)))/((-I)
*a + Sqrt[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d^3*e^2*f*x*Log[1 + (b*E^(I*(c
+ d*x)))/(I*a + Sqrt[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*Log[1
+ (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - Sqrt[a^2 - b^2]*d^3*f^3*x
^3*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - (3*I)*Sqrt[a^2 -
 b^2]*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2
+ b^2])] + (3*I)*Sqrt[a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[2, -((b*E^(I*(c
+ d*x)))/(I*a + Sqrt[-a^2 + b^2]))] + 6*Sqrt[a^2 - b^2]*d*e*f^2*PolyLog[3,
(b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 6*Sqrt[a^2 - b^2]*d*f^3*
x*PolyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 6*Sqrt[a^2
- b^2]*d*e*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))]
- 6*Sqrt[a^2 - b^2]*d*f^3*x*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a
^2 + b^2]))] + (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, (b*E^(I*(c + d*x)))/((-
I)*a + Sqrt[-a^2 + b^2])] - (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, -((b*E^(I*
(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))]))/Sqrt[-(a^2 - b^2)^2] - 12*b*f*(-2*
f^2 + d^2*(e + f*x)^2)*Sin[c + d*x])/(4*b^2*d^4)
```

fricas [C] time = 0.74, size = 2351, normalized size = 3.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(a*d^4*f^3*x^4 + 4*a*d^4*e*f^2*x^3 + 6*a*d^4*e^2*f*x^2 + 4*a*d^4*e^3*x
+ 12*I*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*
a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2))/b) - 12*I*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x +
c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
b^2)/b^2))/b) - 12*I*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*co
s(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2))/b) + 12*I*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-
2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c
))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(-3*I*b*d^2*f^3*x^2 - 6*I*b*d^2*e*f^2*x -
 3*I*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2
*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2) + 2*b)/b + 1) + 2*(3*I*b*d^2*f^3*x^2 + 6*I*b*d^2*e*f^2*x + 3*I*b*d^2*e^
2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
+ 1) + 2*(3*I*b*d^2*f^3*x^2 + 6*I*b*d^2*e*f^2*x + 3*I*b*d^2*e^2*f)*sqrt(-(a
^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(-3
*I*b*d^2*f^3*x^2 - 6*I*b*d^2*e*f^2*x - 3*I*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b
^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c)
```

```
+ I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(b*d^3*e^3 - 3
*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(2*
b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) -
 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt(-(a^2 -
 b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2
)/b^2) - 2*I*a) + 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*
f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*
b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^
2*d*e*f^2 - b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b
*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(b*d^3*f^3*x^3 + 3*
b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c
^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)
 + 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f
 - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d
*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2) + 2*b)/b) - 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e
^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sqrt(-(a^2 - b^2)/b
^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I
*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b*d^3*f^3*x^3 + 3*b*
d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3
*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c
) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)
+ 12*(b*d*f^3*x + b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*c
os(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2))/b) - 12*(b*d*f^3*x + b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*
polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) +
 I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(b*d*f^3*x + b*d*e*f^2)*
sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x +
c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*
(b*d*f^3*x + b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d
*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2))/b) + 4*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + b*d^3*e^3 - 6*b
*d*e*f^2 + 3*(b*d^3*e^2*f - 2*b*d*f^3)*x)*cos(d*x + c) - 12*(b*d^2*f^3*x^2
+ 2*b*d^2*e*f^2*x + b*d^2*e^2*f - 2*b*f^3)*sin(d*x + c))/(b^2*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \cos(dx+c)^2}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cos(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [F] time = 2.03, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\left(\cos^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.299 $\int \frac{(e+fx)^2\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=460

$$\frac{2if^2\sqrt{a^2-b^2}\,\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^3}-\frac{2if^2\sqrt{a^2-b^2}\,\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^2d^3}+\frac{2f\sqrt{a^2-b^2}\,(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^2}-\frac{2f\sqrt{a^2-b^2}\,(e+\cdots}{\cdots}$$

```
[Out] 1/3*a*(f*x+e)^3/b^2/f-2*f^2*cos(d*x+c)/b/d^3+(f*x+e)^2*cos(d*x+c)/b/d-2*f*(
f*x+e)*sin(d*x+c)/b/d^2+I*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1
/2)))*(a^2-b^2)^(1/2)/b^2/d-I*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2
)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d+2*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a
-(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d^2-2*f*(f*x+e)*polylog(2,I*b*exp(I*
(d*x+c))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d^2+2*I*f^2*polylog(3,I*b
*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d^3-2*I*f^2*polylo
g(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d^3
```

Rubi [A] time = 0.93, antiderivative size = 460, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4525, 32, 3296, 2638, 3323, 2264, 2190, 2531, 2282, 6589}

$$\frac{2f\sqrt{a^2-b^2}\,(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^2}-\frac{2f\sqrt{a^2-b^2}\,(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^2d^2}+\frac{2if^2\sqrt{a^2-b^2}\,\text{PolyLog}\cdots}{b^2d^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (a*(e + f*x)^3)/(3*b^2*f) - (2*f^2*Cos[c + d*x])/(b*d^3) + ((e + f*x)^2*Cos
[c + d*x])/(b*d) + (I*Sqrt[a^2 - b^2]*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*
x)))/(a - Sqrt[a^2 - b^2])])/(b^2*d) - (I*Sqrt[a^2 - b^2]*(e + f*x)^2*Log[1
 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*d) + (2*Sqrt[a^2 - b^
2]*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^
2*d^2) - (2*Sqrt[a^2 - b^2]*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a
 + Sqrt[a^2 - b^2])])/(b^2*d^2) + ((2*I)*Sqrt[a^2 - b^2]*f^2*PolyLog[3, (I*
b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^2*d^3) - ((2*I)*Sqrt[a^2 - b^
2]*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*d^3) -
 (2*f*(e + f*x)*Sin[c + d*x])/(b*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{a\int (e+fx)^2\,dx}{b^2} - \frac{\int (e+fx)^2\sin(c+dx)\,dx}{b} - \frac{\left(a^2-b^2\right)\int \frac{(e+fx)^2}{a+b\sin(c+dx)}\,dx}{b^2}$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{(e+fx)^2\cos(c+dx)}{bd} - \frac{\left(2\left(a^2-b^2\right)\right)\int \frac{e^{i(c+dx)}(e+fx)^2}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b^2} - \frac{(2\ldots}{\ldots}$$

$$= \frac{a(e+fx)^3}{3b^2f} + \frac{(e+fx)^2\cos(c+dx)}{bd} - \frac{2f(e+fx)\sin(c+dx)}{bd^2} + \frac{\left(2i\sqrt{a^2-b^2}\right)\int \ldots}{\ldots}$$

$$= \frac{a(e+fx)^3}{3b^2f} - \frac{2f^2\cos(c+dx)}{bd^3} + \frac{(e+fx)^2\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+fx)^2\log\ldots}{b^2d}$$

$$= \frac{a(e+fx)^3}{3b^2f} - \frac{2f^2\cos(c+dx)}{bd^3} + \frac{(e+fx)^2\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+fx)^2\log\ldots}{b^2d}$$

$$= \frac{a(e+fx)^3}{3b^2f} - \frac{2f^2\cos(c+dx)}{bd^3} + \frac{(e+fx)^2\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+fx)^2\log\ldots}{b^2d}$$

$$= \frac{a(e+fx)^3}{3b^2f} - \frac{2f^2\cos(c+dx)}{bd^3} + \frac{(e+fx)^2\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+fx)^2\log\ldots}{b^2d}$$

Mathematica [A] time = 2.64, size = 536, normalized size = 1.17

$$\frac{3i\left(b^2-a^2\right)\left(-i\left(d^2\left(2e^2\sqrt{b^2-a^2}\,\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right)+fx\sqrt{a^2-b^2}\,(2e+fx)\left(\log\left(1-\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)-\log\left(1+\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}+ia}\right)\right)\right)+2f^2\sqrt{a^2-b^2}\,\mathrm{Li}_3\left(\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)-2f^2\ldots}{d^3\sqrt{-\left(a^2-b^2\right)^2}\ldots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (a*x*(3*e^2 + 3*e*f*x + f^2*x^2) + ((3*I)*(-a^2 + b^2)*(-2*Sqrt[a^2 - b^2]*
d*f*(e + f*x)*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] +
 2*Sqrt[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, -((b*E^(I*(c + d*x)))/(I*a + Sq
rt[-a^2 + b^2]))] - I*(d^2*(2*Sqrt[-a^2 + b^2]*e^2*ArcTan[(I*a + b*E^(I*(c
+ d*x)))/Sqrt[a^2 - b^2]] + Sqrt[a^2 - b^2]*f*x*(2*e + f*x)*(Log[1 - (b*E^(
I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - Log[1 + (b*E^(I*(c + d*x)))/(I
*a + Sqrt[-a^2 + b^2])])) + 2*Sqrt[a^2 - b^2]*f^2*PolyLog[3, (b*E^(I*(c + d
```

```
*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 2*Sqrt[a^2 - b^2]*f^2*PolyLog[3, -((b*
E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))]))))/(Sqrt[-(a^2 - b^2)^2]*d^3) +
 (3*b*Cos[d*x]*((-2*f^2 + d^2*(e + f*x)^2)*Cos[c] - 2*d*f*(e + f*x)*Sin[c])
)/d^3 - (3*b*(2*d*f*(e + f*x)*Cos[c] + (-2*f^2 + d^2*(e + f*x)^2)*Sin[c])*S
in[d*x])/d^3)/(3*b^2)
```

fricas [C] time = 0.66, size = 1646, normalized size = 3.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/6*(2*a*d^3*f^2*x^3 + 6*a*d^3*e*f*x^2 + 6*a*d^3*e^2*x + 6*b*f^2*sqrt(-(a^2
 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*c
os(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*b*f^2*sqrt(-
(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*
(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6*b*f^2*sq
rt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c)
 + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*b*f
^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x
 + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) +
(-6*I*b*d*f^2*x - 6*I*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos
(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-
(a^2 - b^2)/b^2) + 2*b)/b + 1) + (6*I*b*d*f^2*x + 6*I*b*d*e*f)*sqrt(-(a^2 -
 b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x
 + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (6*I*b*d*f
^2*x + 6*I*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c)
+ 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2
)/b^2) + 2*b)/b + 1) + (-6*I*b*d*f^2*x - 6*I*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2
)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) +
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 3*(b*d^2*e^2 - 2*b
*c*d*e*f + b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*b*s
in(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 3*(b*d^2*e^2 - 2*b*c*d*
e*f + b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*
x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 3*(b*d^2*e^2 - 2*b*c*d*e*f +
 b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x +
c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 3*(b*d^2*e^2 - 2*b*c*d*e*f + b*c
^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) +
 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 3*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2
*b*c*d*e*f - b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c)
+ 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2
)/b^2) + 2*b)/b) + 3*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f
^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) -
 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 3
```

```
*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*sqrt(-(a^2 - b^2
)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c)
+ I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 3*(b*d^2*f^2*x^2 + 2
*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*
I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 6*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + b*d^
2*e^2 - 2*b*f^2)*cos(d*x + c) - 12*(b*d*f^2*x + b*d*e*f)*sin(d*x + c))/(b^2
*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\cos\left(dx+c\right)^2}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cos(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [F] time = 1.62, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^2\left(\cos^2\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cos(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.300 $\int \frac{(e+fx)\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=298

$$\frac{f\sqrt{a^2-b^2}\,\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^2}-\frac{f\sqrt{a^2-b^2}\,\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^2d^2}+\frac{i\sqrt{a^2-b^2}\,(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d}-\frac{i\sqrt{a^2-b^2}\,(e+fx}{b}$$

```
[Out] a*e*x/b^2+1/2*a*f*x^2/b^2+(f*x+e)*cos(d*x+c)/b/d-f*sin(d*x+c)/b/d^2+I*(f*x+
e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d-I*(f*
x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d+f*p
olylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d^2-f*
polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/b^2/d^2
```

Rubi [A] time = 0.54, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4525, 3296, 2637, 3323, 2264, 2190, 2279, 2391}

$$\frac{f\sqrt{a^2-b^2}\,\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d^2}-\frac{f\sqrt{a^2-b^2}\,\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^2d^2}+\frac{i\sqrt{a^2-b^2}\,(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d}-\frac{i}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (a*e*x)/b^2 + (a*f*x^2)/(2*b^2) + ((e + f*x)*Cos[c + d*x])/(b*d) + (I*Sqrt[
a^2 - b^2]*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/
(b^2*d) - (I*Sqrt[a^2 - b^2]*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + S
qrt[a^2 - b^2])])/(b^2*d) + (Sqrt[a^2 - b^2]*f*PolyLog[2, (I*b*E^(I*(c + d*
x)))/(a - Sqrt[a^2 - b^2])])/(b^2*d^2) - (Sqrt[a^2 - b^2]*f*PolyLog[2, (I*b
*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^2*d^2) - (f*Sin[c + d*x])/(b*d
^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
```

```
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{a\int (e+fx)\,dx}{b^2} - \frac{\int (e+fx)\sin(c+dx)\,dx}{b} - \frac{\left(a^2-b^2\right)\int \frac{e+fx}{a+b\sin(c+dx)}\,dx}{b^2}$$

$$= \frac{aex}{b^2} + \frac{afx^2}{2b^2} + \frac{(e+fx)\cos(c+dx)}{bd} - \frac{\left(2\left(a^2-b^2\right)\right)\int \frac{e^{i(c+dx)}(e+fx)}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{b^2} - \frac{f\int}{}$$

$$= \frac{aex}{b^2} + \frac{afx^2}{2b^2} + \frac{(e+fx)\cos(c+dx)}{bd} - \frac{f\sin(c+dx)}{bd^2} + \frac{\left(2i\sqrt{a^2-b^2}\right)\int \frac{e^{i(c+dx)}(}{2a-2\sqrt{a^2-b^2}}}{b}$$

$$= \frac{aex}{b^2} + \frac{afx^2}{2b^2} + \frac{(e+fx)\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d} - \frac{i\sqrt{}}{}$$

$$= \frac{aex}{b^2} + \frac{afx^2}{2b^2} + \frac{(e+fx)\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d} - \frac{i\sqrt{}}{}$$

$$= \frac{aex}{b^2} + \frac{afx^2}{2b^2} + \frac{(e+fx)\cos(c+dx)}{bd} + \frac{i\sqrt{a^2-b^2}\,(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^2d} - \frac{i\sqrt{}}{}$$

Mathematica [B] time = 7.17, size = 716, normalized size = 2.40

$$2d\left(b^2-a^2\right)(e+fx)\left(\frac{2(de-cf)\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}} - \frac{if\left(\text{Li}_2\left(\frac{a\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)}{a+i\left(b+\sqrt{b^2-a^2}\right)}\right)+\log\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)\log\left(\frac{\sqrt{b^2-a^2}+a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{b^2-a^2}-ia+b}\right)\right)}{\sqrt{b^2-a^2}} + \frac{if\left(\text{Li}_2\left(\frac{a\left(i\tan\left(\frac{1}{2}(c+d\right.\right.}{a-i\left(b+\sqrt{b^2-\right.}}\right.}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Cos[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-(a*(c + d*x)*(c*f - d*(2*e + f*x))) + 2*b*d*(e + f*x)*Cos[c + d*x] + (2*(
-a^2 + b^2)*d*(e + f*x)*((2*(d*e - c*f)*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqr
t[a^2 - b^2]])/Sqrt[a^2 - b^2] - (I*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(b +
 Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])] +
PolyLog[2, (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))]))/S
qrt[-a^2 + b^2] + (I*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^
2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 +
 I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] +
(I*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(-b + Sqrt[-a^2 + b^2] - a*Tan[(c + d
```

```
*x)/2])/(I*a - b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(I + Tan[(c + d*x)/2]
))/(I*a - b + Sqrt[-a^2 + b^2])]))/Sqrt[-a^2 + b^2] - (I*f*(Log[1 + I*Tan[(
c + d*x)/2]]*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqr
t[-a^2 + b^2])] + PolyLog[2, (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-
a^2 + b^2]))]))/Sqrt[-a^2 + b^2]))/(d*e - c*f + I*f*Log[1 - I*Tan[(c + d*x)
/2]] - I*f*Log[1 + I*Tan[(c + d*x)/2]]) - 2*b*f*Sin[c + d*x])/(2*b^2*d^2)
```

fricas [B] time = 0.68, size = 1047, normalized size = 3.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*a*d^2*f*x^2 + 4*a*d^2*e*x - 2*I*b*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/
2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*b*f*sqrt(-(a^2 - b^2)/b^2)
*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*
b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*b*f*sqrt(-(a^2 -
 b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*
x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*I*b*f*s
qrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) -
2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)
- 4*b*f*sin(d*x + c) - 2*(b*d*e - b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos
(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(b
*d*e - b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x +
 c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(b*d*e - b*c*f)*sqrt(-(a^2 -
b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2
)/b^2) + 2*I*a) + 2*(b*d*e - b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x
 + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(b*d*f
*x + b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*
x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b
)/b) + 2*(b*d*f*x + b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x +
c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 -
b^2)/b^2) + 2*b)/b) - 2*(b*d*f*x + b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-
2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c
))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b*d*f*x + b*c*f)*sqrt(-(a^2 - b^2)
/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) +
 I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 4*(b*d*f*x + b*d*e)*c
os(d*x + c))/(b^2*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx + e\right)\cos\left(dx + c\right)^2}{b\sin\left(dx + c\right) + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cos(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [B] time = 0.53, size = 1123, normalized size = 3.77

$$\frac{af\,x^2}{2b^2}+\frac{aex}{b^2}+\frac{\left(dfx+de+if\right)\mathrm{e}^{i(dx+c)}}{2d^2b}+\frac{\left(dfx+de-if\right)\mathrm{e}^{-i(dx+c)}}{2d^2b}+\frac{if\,\mathrm{dilog}\left(\frac{ia+b\,\mathrm{e}^{i(dx+c)}+\sqrt{-a^2+b^2}}{ia+\sqrt{-a^2+b^2}}\right)}{d^2\sqrt{-a^2+b^2}}+\frac{f\ln\left(\frac{ia+b\,\mathrm{e}^{i(dx+c)}\cdots}{ia-\sqrt{-a\cdots}}\right)}{d\sqrt{-a^2+\cdots}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] 1/2*a*f*x^2/b^2+a*e*x/b^2+1/2*(d*f*x+I*f+d*e)/d^2/b*exp(I*(d*x+c))+1/2*(d*f
*x-I*f+d*e)/d^2/b*exp(-I*(d*x+c))-I/d^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp
(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))+1/d*f/(-a^2+b^2)^(1/2
)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x+1/d^
2*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+
b^2)^(1/2)))*c+2*I/d*e/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*
a)/(-a^2+b^2)^(1/2))-1/d*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+
b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-1/d^2*f/(-a^2+b^2)^(1/2)*ln((I*a+b*ex
p(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-a^2/b^2/d*f/(-a^2+
b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)
))*x-a^2/b^2/d^2*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/
2))/(I*a-(-a^2+b^2)^(1/2)))*c+a^2/b^2/d*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*
(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x+a^2/b^2/d^2*f/(-a^2+b^
2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))
*c-2*I/b^2/d*a^2*e/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(
-a^2+b^2)^(1/2))+I/b^2/d^2*a^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c
))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))-I*a^2/b^2/d^2*f/(-a^2+b^2)^(1/
2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))+I/
d^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(
-a^2+b^2)^(1/2)))-2*I/d^2*f*c/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x
+c))-2*a)/(-a^2+b^2)^(1/2))+2*I/b^2/d^2*a^2*f*c/(-a^2+b^2)^(1/2)*arctan(1/2
*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\cos\left(c+d\,x\right)^2\,\left(e+f\,x\right)}{a+b\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*(e + f*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] int((cos(c + d*x)^2*(e + f*x))/(a + b*sin(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.301 $\int \frac{\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=70

$$-\frac{2\sqrt{a^2-b^2}\,\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{b^2d}+\frac{ax}{b^2}+\frac{\cos(c+dx)}{bd}$$

```
[Out] a*x/b^2+cos(d*x+c)/b/d-2*arctan((b+a*tan(1/2*d*x+1/2*c))/(a^2-b^2)^(1/2))*(
a^2-b^2)^(1/2)/b^2/d
```

Rubi [A] time = 0.12, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2695, 2735, 2660, 618, 204}

$$-\frac{2\sqrt{a^2-b^2}\,\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{b^2d}+\frac{ax}{b^2}+\frac{\cos(c+dx)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[c + d*x]^2/(a + b*Sin[c + d*x]),x]
```

```
[Out] (a*x)/b^2 - (2*Sqrt[a^2 - b^2]*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b
^2]])/(b^2*d) + Cos[c + d*x]/(b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
```

```
a^2 - b^2, 0]
```

Rule 2695

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_), x_Symbol] :> Simp[(g*(g*Cos[e + f*x])^(p - 1)*(a + b*Sin[e + f*x
])^(m + 1))/(b*f*(m + p)), x] + Dist[(g^2*(p - 1))/(b*(m + p)), Int[(g*Cos[
e + f*x])^(p - 2)*(a + b*Sin[e + f*x])^m*(b + a*Sin[e + f*x]), x], x] /; Fr
eeQ[{a, b, e, f, g, m}, x] && NeQ[a^2 - b^2, 0] && GtQ[p, 1] && NeQ[m + p,
0] && IntegersQ[2*m, 2*p]
```

Rule 2735

```
Int[((a_.) + (b_.)*sin[(e_.) + (f_.)*(x_)])/((c_.) + (d_.)*sin[(e_.) + (f_.
)*(x_)]), x_Symbol] :> Simp[(b*x)/d, x] - Dist[(b*c - a*d)/d, Int[1/(c + d*
Sin[e + f*x]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx &= \frac{\cos(c+dx)}{bd}+\frac{\int \frac{b+a\sin(c+dx)}{a+b\sin(c+dx)}\,dx}{b}\\
&= \frac{ax}{b^2}+\frac{\cos(c+dx)}{bd}-\frac{\left(a^2-b^2\right)\int \frac{1}{a+b\sin(c+dx)}\,dx}{b^2}\\
&= \frac{ax}{b^2}+\frac{\cos(c+dx)}{bd}-\frac{\left(2\left(a^2-b^2\right)\right)\text{Subst}\left(\int \frac{1}{a+2bx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(c+dx)\right)\right)}{b^2d}\\
&= \frac{ax}{b^2}+\frac{\cos(c+dx)}{bd}+\frac{\left(4\left(a^2-b^2\right)\right)\text{Subst}\left(\int \frac{1}{-4\left(a^2-b^2\right)-x^2}\,dx,x,2b+2a\tan\left(\frac{1}{2}(c+dx)\right)\right)}{b^2d}\\
&= \frac{ax}{b^2}-\frac{2\sqrt{a^2-b^2}\,\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b^2d}+\frac{\cos(c+dx)}{bd}
\end{aligned}$$

Mathematica [B] time = 1.40, size = 361, normalized size = 5.16

$$\frac{\cos(c+dx)\left(2(a-b)\sqrt{1-\sin(c+dx)}\,\tanh^{-1}\left(\frac{\sqrt{a-b}\sqrt{-\frac{b(\sin(c+dx)+1)}{a-b}}}{\sqrt{a+b}\sqrt{-\frac{b(\sin(c+dx)-1)}{a+b}}}\right)+\sqrt{a+b}\left(\sqrt{-\frac{b(\sin(c+dx)-1)}{a+b}}\left(\sqrt{a-b}\sqrt{1-\sin(\right.\right.\right.}{bd\sqrt{a-b}\sqrt{a+b}\sqrt{1-\sin(c+dx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[c + d*x]^2/(a + b*Sin[c + d*x]),x]
```

```
[Out] (Cos[c + d*x]*(2*(a - b)*ArcTanh[(Sqrt[a - b]*Sqrt[-((b*(1 + Sin[c + d*x]))
/(a - b))])/(Sqrt[a + b]*Sqrt[-((b*(-1 + Sin[c + d*x]))/(a + b))])]*Sqrt[1
- Sin[c + d*x]] + Sqrt[a + b]*(-2*Sqrt[a - b]*ArcTanh[Sqrt[(b*(1 + Sin[c +
d*x]))/(-a + b)]/Sqrt[-((b*(-1 + Sin[c + d*x]))/(a + b))]]*Sqrt[1 - Sin[c +
 d*x]] + Sqrt[-((b*(-1 + Sin[c + d*x]))/(a + b))]*(2*Sqrt[b]*ArcSinh[(Sqrt[
a - b]*Sqrt[-((b*(1 + Sin[c + d*x]))/(a - b))])/(Sqrt[2]*Sqrt[b])] + Sqrt[a
 - b]*Sqrt[1 - Sin[c + d*x]]*Sqrt[(b*(1 + Sin[c + d*x]))/(-a + b)]))))/(Sqr
t[a - b]*b*Sqrt[a + b]*d*Sqrt[1 - Sin[c + d*x]]*Sqrt[-((b*(-1 + Sin[c + d*x
]))/(a + b))]*Sqrt[-((b*(1 + Sin[c + d*x]))/(a - b))])
```

fricas [A] time = 0.50, size = 214, normalized size = 3.06

$$\left[\frac{2\,adx + 2\,b\cos\left(dx+c\right) + \sqrt{-a^2+b^2}\,\log\left(\frac{\left(2\,a^2-b^2\right)\cos(dx+c)^2 - 2\,ab\sin(dx+c) - a^2 - b^2 + 2\left(a\cos(dx+c)\sin(dx+c) + b\cos(dx+c)\right)\sqrt{-a^2}}{b^2\cos(dx+c)^2 - 2\,ab\sin(dx+c) - a^2 - b^2}\right.}{2\,b^2 d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] [1/2*(2*a*d*x + 2*b*cos(d*x + c) + sqrt(-a^2 + b^2)*log(((2*a^2 - b^2)*cos(
d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2 + 2*(a*cos(d*x + c)*sin(d*x + c
) + b*cos(d*x + c))*sqrt(-a^2 + b^2))/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x +
 c) - a^2 - b^2)))/(b^2*d), (a*d*x + b*cos(d*x + c) + sqrt(a^2 - b^2)*arcta
n(-(a*sin(d*x + c) + b)/(sqrt(a^2 - b^2)*cos(d*x + c))))/(b^2*d)]
```

giac [A] time = 0.32, size = 95, normalized size = 1.36

$$\frac{\frac{(dx+c)a}{b^2} - \frac{2\left(\pi\left\lfloor\frac{dx+c}{2\pi}+\frac{1}{2}\right\rfloor\mathrm{sgn}(a) + \arctan\left(\frac{a\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+b}{\sqrt{a^2-b^2}}\right)\right)\sqrt{a^2-b^2}}{b^2} + \frac{2}{\left(\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^2+1\right)b}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] ((d*x + c)*a/b^2 - 2*(pi*floor(1/2*(d*x + c)/pi + 1/2)*sgn(a) + arctan((a*t
an(1/2*d*x + 1/2*c) + b)/sqrt(a^2 - b^2)))*sqrt(a^2 - b^2)/b^2 + 2/((tan(1/
2*d*x + 1/2*c)^2 + 1)*b))/d
```

maple [B] time = 0.00, size = 142, normalized size = 2.03

$$-\frac{2\arctan\left(\frac{2a\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+2b}{2\sqrt{a^2-b^2}}\right)a^2}{d\,b^2\sqrt{a^2-b^2}}+\frac{2\arctan\left(\frac{2a\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+2b}{2\sqrt{a^2-b^2}}\right)}{d\sqrt{a^2-b^2}}+\frac{2}{db\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}+\frac{2a\arctan\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] -2/d/b^2/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)/(a^2-b^2)^
(1/2))*a^2+2/d/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)/(a^2
-b^2)^(1/2))+2/d/b/(1+tan(1/2*d*x+1/2*c)^2)+2/d/b^2*a*arctan(tan(1/2*d*x+1/
2*c))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [B] time = 3.92, size = 318, normalized size = 4.54

$$\frac{2}{b\,d\,\left({\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)}^2+1\right)}+\frac{2\,a\,\mathrm{atan}\left(\frac{64\,a^2\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{64\,a^2-\frac{64\,a^4}{b^2}}+\frac{64\,a^4\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{64\,a^4-64\,a^2\,b^2}\right)}{b^2\,d}+\frac{2\,\mathrm{atanh}\left(\frac{64\,a^2\,\sqrt{b^2-a^2}}{64\,a^2\,b-\frac{64\,a^4}{b}-128\,a^3\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+128\,a\,b^2\tan\right.}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)^2/(a + b*sin(c + d*x)),x)
```

```
[Out] 2/(b*d*(tan(c/2 + (d*x)/2)^2 + 1)) + (2*a*atan((64*a^2*tan(c/2 + (d*x)/2))/
(64*a^2 - (64*a^4)/b^2) + (64*a^4*tan(c/2 + (d*x)/2))/(64*a^4 - 64*a^2*b^2)
))/(b^2*d) + (2*atanh((64*a^2*(b^2 - a^2)^(1/2))/(64*a^2*b - (64*a^4)/b - 1
28*a^3*tan(c/2 + (d*x)/2) + 128*a*b^2*tan(c/2 + (d*x)/2)) + (128*a*tan(c/2
```

```
+ (d*x)/2)*(b^2 - a^2)^(1/2))/(64*a^2 - (64*a^4)/b^2 - (128*a^3*tan(c/2 + (
d*x)/2))/b + 128*a*b*tan(c/2 + (d*x)/2)) + (64*a^3*tan(c/2 + (d*x)/2)*(b^2
- a^2)^(1/2))/(64*a^4 - 64*a^2*b^2 - 128*a*b^3*tan(c/2 + (d*x)/2) + 128*a^3
*b*tan(c/2 + (d*x)/2)))*(b^2 - a^2)^(1/2))/(b^2*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.302 $\int \frac{(e+fx)^3 \cos^3(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=737

$$-\frac{6if^3\left(a^2-b^2\right)\text{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^4}-\frac{6if^3\left(a^2-b^2\right)\text{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^3d^4}-\frac{6f^2\left(a^2-b^2\right)(e+fx)\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^3}-\frac{6f^2\left(a^2-b^2\right)}{}$$

```
[Out] -3/8*f^3*x/b/d^3+1/4*(f*x+e)^3/b/d+3*I*(a^2-b^2)*f*(f*x+e)^2*polylog(2,I*b*
exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^3/d^2-6*a*f^3*cos(d*x+c)/b^2/d^4+3*a*
f*(f*x+e)^2*cos(d*x+c)/b^2/d^2-(a^2-b^2)*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/
(a-(a^2-b^2)^(1/2)))/b^3/d-(a^2-b^2)*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(
a^2-b^2)^(1/2)))/b^3/d-6*I*(a^2-b^2)*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a
^2-b^2)^(1/2)))/b^3/d^4-6*I*(a^2-b^2)*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(
a^2-b^2)^(1/2)))/b^3/d^4-6*(a^2-b^2)*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c
))/(a-(a^2-b^2)^(1/2)))/b^3/d^3-6*(a^2-b^2)*f^2*(f*x+e)*polylog(3,I*b*exp(I
*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^3/d^3+3*I*(a^2-b^2)*f*(f*x+e)^2*polylog(2,
I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^3/d^2+1/4*I*(a^2-b^2)*(f*x+e)^4/b
^3/f-6*a*f^2*(f*x+e)*sin(d*x+c)/b^2/d^3+a*(f*x+e)^3*sin(d*x+c)/b^2/d+3/8*f^
3*cos(d*x+c)*sin(d*x+c)/b/d^4-3/4*f*(f*x+e)^2*cos(d*x+c)*sin(d*x+c)/b/d^2+3
/4*f^2*(f*x+e)*sin(d*x+c)^2/b/d^3-1/2*(f*x+e)^3*sin(d*x+c)^2/b/d
```

Rubi [A] time = 0.88, antiderivative size = 737, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 14, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4525, 3296, 2638, 4404, 3311, 32, 2635, 8, 4519, 2190, 2531, 6609, 2282, 6589}

$$-\frac{6f^2\left(a^2-b^2\right)(e+fx)\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^3}-\frac{6f^2\left(a^2-b^2\right)(e+fx)\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^3d^3}+\frac{3if\left(a^2-b^2\right)(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-3*f^3*x)/(8*b*d^3) + (e + f*x)^3/(4*b*d) + ((I/4)*(a^2 - b^2)*(e + f*x)^4
)/(b^3*f) - (6*a*f^3*Cos[c + d*x])/(b^2*d^4) + (3*a*f*(e + f*x)^2*Cos[c + d
*x])/(b^2*d^2) - ((a^2 - b^2)*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a
- Sqrt[a^2 - b^2])])/(b^3*d) - ((a^2 - b^2)*(e + f*x)^3*Log[1 - (I*b*E^(I*(
c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*d) + ((3*I)*(a^2 - b^2)*f*(e + f*x)
^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^3*d^2) + ((3
*I)*(a^2 - b^2)*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^
2 - b^2])])/(b^3*d^2) - (6*(a^2 - b^2)*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(
c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^3*d^3) - (6*(a^2 - b^2)*f^2*(e + f*x)
```

```
*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*d^3) - ((6*I
)*(a^2 - b^2)*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/
(b^3*d^4) - ((6*I)*(a^2 - b^2)*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sq
rt[a^2 - b^2])])/(b^3*d^4) - (6*a*f^2*(e + f*x)*Sin[c + d*x])/(b^2*d^3) + (
a*(e + f*x)^3*Sin[c + d*x])/(b^2*d) + (3*f^3*Cos[c + d*x]*Sin[c + d*x])/(8*
b*d^4) - (3*f*(e + f*x)^2*Cos[c + d*x]*Sin[c + d*x])/(4*b*d^2) + (3*f^2*(e
+ f*x)*Sin[c + d*x]^2)/(4*b*d^3) - ((e + f*x)^3*Sin[c + d*x]^2)/(2*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
```

]

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
```

```
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos^3(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{a\int (e+fx)^3\cos(c+dx)\,dx}{b^2} - \frac{\int (e+fx)^3\cos(c+dx)\sin(c+dx)\,dx}{b} - \frac{\left(a^2-b^2\right)\cdots}{\cdots}$$

$$= \frac{i\left(a^2-b^2\right)(e+fx)^4}{4b^3f} + \frac{a(e+fx)^3\sin(c+dx)}{b^2d} - \frac{(e+fx)^3\sin^2(c+dx)}{2bd} - \frac{\left(a^2-b\cdots\right.}{\cdots}$$

$$= \frac{i\left(a^2-b^2\right)(e+fx)^4}{4b^3f} + \frac{3af(e+fx)^2\cos(c+dx)}{b^2d^2} - \frac{\left(a^2-b^2\right)(e+fx)^3\log\left(1-\cdots\right.}{b^3d}$$

$$= \frac{(e+fx)^3}{4bd} + \frac{i\left(a^2-b^2\right)(e+fx)^4}{4b^3f} + \frac{3af(e+fx)^2\cos(c+dx)}{b^2d^2} - \frac{\left(a^2-b^2\right)(e+fx\cdots}{\cdots}$$

$$= -\frac{3f^3x}{8bd^3} + \frac{(e+fx)^3}{4bd} + \frac{i\left(a^2-b^2\right)(e+fx)^4}{4b^3f} - \frac{6af^3\cos(c+dx)}{b^2d^4} + \frac{3af(e+fx)^2\cdots}{b^2d^2}$$

$$= -\frac{3f^3x}{8bd^3} + \frac{(e+fx)^3}{4bd} + \frac{i\left(a^2-b^2\right)(e+fx)^4}{4b^3f} - \frac{6af^3\cos(c+dx)}{b^2d^4} + \frac{3af(e+fx)^2\cdots}{b^2d^2}$$

$$= -\frac{3f^3x}{8bd^3} + \frac{(e+fx)^3}{4bd} + \frac{i\left(a^2-b^2\right)(e+fx)^4}{4b^3f} - \frac{6af^3\cos(c+dx)}{b^2d^4} + \frac{3af(e+fx)^2\cdots}{b^2d^2}$$

Mathematica [B] time = 10.71, size = 2452, normalized size = 3.33

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-32*(a^2 - b^2)*e^3*x*Cot[c] - 48*(a^2 - b^2)*e^2*f*x^2*Cot[c] - 32*(a^2 -
 b^2)*e*f^2*x^3*Cot[c] - 8*(a^2 - b^2)*f^3*x^4*Cot[c] + (16*(a^2 - b^2)*((4
*I)*d^4*e^3*E^((2*I)*c)*x + (6*I)*d^4*e^2*E^((2*I)*c)*f*x^2 + (4*I)*d^4*e*E
^((2*I)*c)*f^2*x^3 + I*d^4*E^((2*I)*c)*f^3*x^4 + (2*I)*d^3*e^3*ArcTan[(2*a*
E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c + d*x))))] - (2*I)*d^3*e^3*E^((2*I)*c
)*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c + d*x))))] + d^3*e^3*Lo
g[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2] - d^3*e^3*E
^((2*I)*c)*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2
] + 6*d^3*e^2*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 +
 b^2)*E^((2*I)*c)])] - 6*d^3*e^2*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x
)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e*f^2*x^2*Log[1
 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] -
6*d^3*e*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sq
rt[(-a^2 + b^2)*E^((2*I)*c)])] + 2*d^3*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x))
)/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 2*d^3*E^((2*I)*c)*f^3*x
^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*
c)])] + 6*d^3*e^2*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a
^2 + b^2)*E^((2*I)*c)])] - 6*d^3*e^2*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c +
 d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e*f^2*x^2*L
og[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])
] - 6*d^3*e*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c)
+ Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 2*d^3*f^3*x^3*Log[1 + (b*E^(I*(2*c + d
*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 2*d^3*E^((2*I)*c)*f
^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2
*I)*c)])] + (6*I)*d^2*(-1 + E^((2*I)*c))*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I
*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + (6*I)*d^2*
(-1 + E^((2*I)*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(I*(2*c + d*x)))/(I*a*E^
(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + 12*d*e*f^2*PolyLog[3, (I*b*E^(I
*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*d*e*E^(
(2*I)*c)*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 +
 b^2)*E^((2*I)*c)])] + 12*d*f^3*x*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(
I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*d*E^((2*I)*c)*f^3*x*PolyLog[
3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])]
+ 12*d*e*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 +
 b^2)*E^((2*I)*c)]))] - 12*d*e*E^((2*I)*c)*f^2*PolyLog[3, -((b*E^(I*(2*c +
d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + 12*d*f^3*x*PolyLo
g[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])
```

```
)] - 12*d*E^((2*I)*c)*f^3*x*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c)
 + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + (12*I)*f^3*PolyLog[4, (I*b*E^(I*(2*c
 + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - (12*I)*E^((2*I)
*c)*f^3*PolyLog[4, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)
*E^((2*I)*c)])] + (12*I)*f^3*PolyLog[4, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c
) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] - (12*I)*E^((2*I)*c)*f^3*PolyLog[4, -
((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))]))/(
d^4*(-1 + E^((2*I)*c))) + (16*a*b*(-6*f^3 - (6*I)*d*f^2*(e + f*x) + 3*d^2*f
*(e + f*x)^2 + I*d^3*(e + f*x)^3)*(Cos[c + d*x] - I*Sin[c + d*x]))/d^4 + (1
6*a*b*(-6*f^3 + (6*I)*d*f^2*(e + f*x) + 3*d^2*f*(e + f*x)^2 - I*d^3*(e + f*
x)^3)*(Cos[c + d*x] + I*Sin[c + d*x]))/d^4 + (b^2*((3*I)*f^3 - 6*d*f^2*(e +
 f*x) - (6*I)*d^2*f*(e + f*x)^2 + 4*d^3*(e + f*x)^3)*(Cos[2*(c + d*x)] - I*
Sin[2*(c + d*x)]))/d^4 + (b^2*((-3*I)*f^3 - 6*d*f^2*(e + f*x) + (6*I)*d^2*f
*(e + f*x)^2 + 4*d^3*(e + f*x)^3)*(Cos[2*(c + d*x)] + I*Sin[2*(c + d*x)]))/
d^4)/(32*b^3)
```

fricas [C] time = 0.82, size = 2704, normalized size = 3.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/8*(2*b^2*d^3*f^3*x^3 + 6*b^2*d^3*e*f^2*x^2 + 24*I*(a^2 - b^2)*f^3*polylo
g(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*s
in(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 24*I*(a^2 - b^2)*f^3*polylog(4, 1
/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 24*I*(a^2 - b^2)*f^3*polylog(4, 1/2*(-2
*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2))/b) - 24*I*(a^2 - b^2)*f^3*polylog(4, 1/2*(-2*I*a*
cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2))/b) - 2*(2*b^2*d^3*f^3*x^3 + 6*b^2*d^3*e*f^2*x^2 + 2*b^
2*d^3*e^3 - 3*b^2*d*e*f^2 + 3*(2*b^2*d^3*e^2*f - b^2*d*f^3)*x)*cos(d*x + c)
^2 + 3*(2*b^2*d^3*e^2*f - b^2*d*f^3)*x - 24*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*
f^2*x + a*b*d^2*e^2*f - 2*a*b*f^3)*cos(d*x + c) - (-12*I*(a^2 - b^2)*d^2*f^
3*x^2 - 24*I*(a^2 - b^2)*d^2*e*f^2*x - 12*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-1
/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (-12*I*(a^2 - b^2)*d^2*f^3*x^
2 - 24*I*(a^2 - b^2)*d^2*e*f^2*x - 12*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-1/2*(
2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c
))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (12*I*(a^2 - b^2)*d^2*f^3*x^2 + 2
4*I*(a^2 - b^2)*d^2*e*f^2*x + 12*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-1/2*(-2*I*
a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (12*I*(a^2 - b^2)*d^2*f^3*x^2 + 24*I*
(a^2 - b^2)*d^2*e*f^2*x + 12*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-1/2*(-2*I*a*co
```

```
s(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 4*((a^2 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*
d^2*e^2*f + 3*(a^2 - b^2)*c^2*d*e*f^2 - (a^2 - b^2)*c^3*f^3)*log(2*b*cos(d*
x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 4*((a^2
 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2*e^2*f + 3*(a^2 - b^2)*c^2*d*e*f^2 - (
a^2 - b^2)*c^3*f^3)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(
a^2 - b^2)/b^2) - 2*I*a) + 4*((a^2 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2*e^2
*f + 3*(a^2 - b^2)*c^2*d*e*f^2 - (a^2 - b^2)*c^3*f^3)*log(-2*b*cos(d*x + c)
 + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 4*((a^2 - b^2
)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2*e^2*f + 3*(a^2 - b^2)*c^2*d*e*f^2 - (a^2 -
b^2)*c^3*f^3)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 -
 b^2)/b^2) - 2*I*a) + 4*((a^2 - b^2)*d^3*f^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*
x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + 3*(a^2 - b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)
*c^2*d*e*f^2 + (a^2 - b^2)*c^3*f^3)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d
*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*
b)/b) + 4*((a^2 - b^2)*d^3*f^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*x^2 + 3*(a^2 -
 b^2)*d^3*e^2*f*x + 3*(a^2 - b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)*c^2*d*e*f^2 +
 (a^2 - b^2)*c^3*f^3)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b
*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 4*((a^
2 - b^2)*d^3*f^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*
f*x + 3*(a^2 - b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)*c^2*d*e*f^2 + (a^2 - b^2)*c
^3*f^3)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c)
 + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 4*((a^2 - b^2)*d^3*
f^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + 3*(a^2
- b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)*c^2*d*e*f^2 + (a^2 - b^2)*c^3*f^3)*log(1
/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*
x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 24*((a^2 - b^2)*d*f^3*x + (a^2 -
 b^2)*d*e*f^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b
*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 24*((a^2 - b
^2)*d*f^3*x + (a^2 - b^2)*d*e*f^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a
*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
))/b) + 24*((a^2 - b^2)*d*f^3*x + (a^2 - b^2)*d*e*f^2)*polylog(3, 1/2*(-2*I
*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*
sqrt(-(a^2 - b^2)/b^2))/b) + 24*((a^2 - b^2)*d*f^3*x + (a^2 - b^2)*d*e*f^2)
*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c)
 - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - (8*a*b*d^3*f^3*x^3 + 24*a
*b*d^3*e*f^2*x^2 + 8*a*b*d^3*e^3 - 48*a*b*d*e*f^2 + 24*(a*b*d^3*e^2*f - 2*a
*b*d*f^3)*x - 3*(2*b^2*d^2*f^3*x^2 + 4*b^2*d^2*e*f^2*x + 2*b^2*d^2*e^2*f -
b^2*f^3)*cos(d*x + c))*sin(d*x + c))/(b^3*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \cos(dx+c)^3}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cos(d*x + c)^3/(b*sin(d*x + c) + a), x)
```

maple [F] time = 2.84, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\cos^{3}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)^3/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)^3/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)**3/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.303 $\int \frac{(e+fx)^2 \cos^3(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=548

$$-\frac{2f^2\left(a^2-b^2\right)\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^3}-\frac{2f^2\left(a^2-b^2\right)\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^3d^3}+\frac{2if\left(a^2-b^2\right)(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^2}+\frac{2if\left(a^2-b^2\right)}{}$$

```
[Out] 1/2*e*f*x/b/d+1/4*f^2*x^2/b/d+1/3*I*(a^2-b^2)*(f*x+e)^3/b^3/f+2*a*f*(f*x+e)
*cos(d*x+c)/b^2/d^2-(a^2-b^2)*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2
)^(1/2)))/b^3/d-(a^2-b^2)*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1
/2)))/b^3/d+2*I*(a^2-b^2)*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^
2)^(1/2)))/b^3/d^2+2*I*(a^2-b^2)*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+
(a^2-b^2)^(1/2)))/b^3/d^2-2*(a^2-b^2)*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(
a^2-b^2)^(1/2)))/b^3/d^3-2*(a^2-b^2)*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a+(a
^2-b^2)^(1/2)))/b^3/d^3-2*a*f^2*sin(d*x+c)/b^2/d^3+a*(f*x+e)^2*sin(d*x+c)/b
^2/d-1/2*f*(f*x+e)*cos(d*x+c)*sin(d*x+c)/b/d^2+1/4*f^2*sin(d*x+c)^2/b/d^3-1
/2*(f*x+e)^2*sin(d*x+c)^2/b/d
```

Rubi [A] time = 0.73, antiderivative size = 548, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 10, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {4525, 3296, 2637, 4404, 3310, 4519, 2190, 2531, 2282, 6589}

$$\frac{2if\left(a^2-b^2\right)(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^2}+\frac{2if\left(a^2-b^2\right)(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^3d^2}-\frac{2f^2\left(a^2-b^2\right)\text{PolyLo}}{b^3d^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (e*f*x)/(2*b*d) + (f^2*x^2)/(4*b*d) + ((I/3)*(a^2 - b^2)*(e + f*x)^3)/(b^3*
f) + (2*a*f*(e + f*x)*Cos[c + d*x])/(b^2*d^2) - ((a^2 - b^2)*(e + f*x)^2*Lo
g[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^3*d) - ((a^2 - b^2)*
(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*d) +
 ((2*I)*(a^2 - b^2)*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[
a^2 - b^2])])/(b^3*d^2) + ((2*I)*(a^2 - b^2)*f*(e + f*x)*PolyLog[2, (I*b*E^
(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*d^2) - (2*(a^2 - b^2)*f^2*PolyL
og[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^3*d^3) - (2*(a^2 - b
^2)*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*d^3)
- (2*a*f^2*Sin[c + d*x])/(b^2*d^3) + (a*(e + f*x)^2*Sin[c + d*x])/(b^2*d) -
 (f*(e + f*x)*Cos[c + d*x]*Sin[c + d*x])/(2*b*d^2) + (f^2*Sin[c + d*x]^2)/(
4*b*d^3) - ((e + f*x)^2*Sin[c + d*x]^2)/(2*b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos^3(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{a\int(e+fx)^2\cos(c+dx)\,dx}{b^2} - \frac{\int(e+fx)^2\cos(c+dx)\sin(c+dx)\,dx}{b} - \frac{\left(a^2-b^2\right)}{}$$

$$= \frac{i\left(a^2-b^2\right)(e+fx)^3}{3b^3f} + \frac{a(e+fx)^2\sin(c+dx)}{b^2d} - \frac{(e+fx)^2\sin^2(c+dx)}{2bd} - \frac{\left(a^2-b\right.}{}$$

$$= \frac{i\left(a^2-b^2\right)(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cos(c+dx)}{b^2d^2} - \frac{\left(a^2-b^2\right)(e+fx)^2\log\left(1-\frac{ib}{a-}\right.}{b^3d}$$

$$= \frac{efx}{2bd} + \frac{f^2x^2}{4bd} + \frac{i\left(a^2-b^2\right)(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cos(c+dx)}{b^2d^2} - \frac{\left(a^2-b^2\right)(e+f}{}$$

$$= \frac{efx}{2bd} + \frac{f^2x^2}{4bd} + \frac{i\left(a^2-b^2\right)(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cos(c+dx)}{b^2d^2} - \frac{\left(a^2-b^2\right)(e+f}{}$$

$$= \frac{efx}{2bd} + \frac{f^2x^2}{4bd} + \frac{i\left(a^2-b^2\right)(e+fx)^3}{3b^3f} + \frac{2af(e+fx)\cos(c+dx)}{b^2d^2} - \frac{\left(a^2-b^2\right)(e+f}{}$$

Mathematica [B] time = 5.97, size = 2397, normalized size = 4.37

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((48*I)*a^2*d^3*e^2*E^((2*I)*c)*x - (48*I)*b^2*d^3*e^2*E^((2*I)*c)*x + (48*
I)*a^2*d^3*e*E^((2*I)*c)*f*x^2 - (48*I)*b^2*d^3*e*E^((2*I)*c)*f*x^2 + (16*I
)*a^2*d^3*E^((2*I)*c)*f^2*x^3 - (16*I)*b^2*d^3*E^((2*I)*c)*f^2*x^3 - (48*I)
*a^2*d^2*e^2*E^((2*I)*c)*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c
+ d*x))))] + (48*I)*b^2*d^2*e^2*E^((2*I)*c)*ArcTan[(2*a*E^(I*(c + d*x)))/(b
*(-1 + E^((2*I)*(c + d*x))))] + (24*I)*a*b*d^2*e^2*E^(I*c)*Cos[d*x] - (24*I
)*a*b*d^2*e^2*E^((3*I)*c)*Cos[d*x] + 48*a*b*d*e*E^(I*c)*f*Cos[d*x] + 48*a*b
*d*e*E^((3*I)*c)*f*Cos[d*x] - (48*I)*a*b*E^(I*c)*f^2*Cos[d*x] + (48*I)*a*b*
E^((3*I)*c)*f^2*Cos[d*x] + (48*I)*a*b*d^2*e*E^(I*c)*f*x*Cos[d*x] - (48*I)*a
*b*d^2*e*E^((3*I)*c)*f*x*Cos[d*x] + 48*a*b*d*E^(I*c)*f^2*x*Cos[d*x] + 48*a*
b*d*E^((3*I)*c)*f^2*x*Cos[d*x] + (24*I)*a*b*d^2*E^(I*c)*f^2*x^2*Cos[d*x] -
(24*I)*a*b*d^2*E^((3*I)*c)*f^2*x^2*Cos[d*x] + 6*b^2*d^2*e^2*Cos[2*d*x] + 6*
b^2*d^2*e^2*E^((4*I)*c)*Cos[2*d*x] - (6*I)*b^2*d*e*f*Cos[2*d*x] + (6*I)*b^2
*d*e*E^((4*I)*c)*f*Cos[2*d*x] - 3*b^2*f^2*Cos[2*d*x] - 3*b^2*E^((4*I)*c)*f^
```

```
2*Cos[2*d*x] + 12*b^2*d^2*e*f*x*Cos[2*d*x] + 12*b^2*d^2*e*E^((4*I)*c)*f*x*C
os[2*d*x] - (6*I)*b^2*d*f^2*x*Cos[2*d*x] + (6*I)*b^2*d*E^((4*I)*c)*f^2*x*Co
s[2*d*x] + 6*b^2*d^2*f^2*x^2*Cos[2*d*x] + 6*b^2*d^2*E^((4*I)*c)*f^2*x^2*Cos
[2*d*x] - 24*a^2*d^2*e^2*E^((2*I)*c)*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-
1 + E^((2*I)*(c + d*x)))^2] + 24*b^2*d^2*e^2*E^((2*I)*c)*Log[4*a^2*E^((2*I)
*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2] - 96*a^2*d^2*e*E^((2*I)*c)*
f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)
*c)])] + 96*b^2*d^2*e*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^
(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 48*a^2*d^2*E^((2*I)*c)*f^2*x^2*L
og[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])
] + 48*b^2*d^2*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*
c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 96*a^2*d^2*e*E^((2*I)*c)*f*x*Log[1
+ (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 9
6*b^2*d^2*e*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sq
rt[(-a^2 + b^2)*E^((2*I)*c)])] - 48*a^2*d^2*E^((2*I)*c)*f^2*x^2*Log[1 + (b*
E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 48*b^2
*d^2*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[
(-a^2 + b^2)*E^((2*I)*c)])] + (96*I)*(a^2 - b^2)*d*E^((2*I)*c)*f*(e + f*x)*
PolyLog[2, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I
)*c)])] + (96*I)*(a^2 - b^2)*d*E^((2*I)*c)*f*(e + f*x)*PolyLog[2, -((b*E^(I
*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] - 96*a^2*E^
((2*I)*c)*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2
+ b^2)*E^((2*I)*c)])] + 96*b^2*E^((2*I)*c)*f^2*PolyLog[3, (I*b*E^(I*(2*c +
d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 96*a^2*E^((2*I)*c)
*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^
((2*I)*c)]))] + 96*b^2*E^((2*I)*c)*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(
I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + 24*a*b*d^2*e^2*E^(I*c)*Si
n[d*x] + 24*a*b*d^2*e^2*E^((3*I)*c)*Sin[d*x] - (48*I)*a*b*d*e*E^(I*c)*f*Sin
[d*x] + (48*I)*a*b*d*e*E^((3*I)*c)*f*Sin[d*x] - 48*a*b*E^(I*c)*f^2*Sin[d*x]
 - 48*a*b*E^((3*I)*c)*f^2*Sin[d*x] + 48*a*b*d^2*e*E^(I*c)*f*x*Sin[d*x] + 48
*a*b*d^2*e*E^((3*I)*c)*f*x*Sin[d*x] - (48*I)*a*b*d*E^(I*c)*f^2*x*Sin[d*x] +
 (48*I)*a*b*d*E^((3*I)*c)*f^2*x*Sin[d*x] + 24*a*b*d^2*E^(I*c)*f^2*x^2*Sin[d
*x] + 24*a*b*d^2*E^((3*I)*c)*f^2*x^2*Sin[d*x] - (6*I)*b^2*d^2*e^2*Sin[2*d*x
] + (6*I)*b^2*d^2*e^2*E^((4*I)*c)*Sin[2*d*x] - 6*b^2*d*e*f*Sin[2*d*x] - 6*b
^2*d*e*E^((4*I)*c)*f*Sin[2*d*x] + (3*I)*b^2*f^2*Sin[2*d*x] - (3*I)*b^2*E^((
4*I)*c)*f^2*Sin[2*d*x] - (12*I)*b^2*d^2*e*f*x*Sin[2*d*x] + (12*I)*b^2*d^2*e
*E^((4*I)*c)*f*x*Sin[2*d*x] - 6*b^2*d*f^2*x*Sin[2*d*x] - 6*b^2*d*E^((4*I)*c
)*f^2*x*Sin[2*d*x] - (6*I)*b^2*d^2*f^2*x^2*Sin[2*d*x] + (6*I)*b^2*d^2*E^((4
*I)*c)*f^2*x^2*Sin[2*d*x])/(48*b^3*d^3*E^((2*I)*c))
```

fricas [C] time = 0.65, size = 1793, normalized size = 3.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="fricas")

[Out] -1/4*(b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 4*(a^2 - b^2)*f^2*polylog(3, 1/2*
(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2))/b) + 4*(a^2 - b^2)*f^2*polylog(3, 1/2*(2*I*a*co
s(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2))/b) + 4*(a^2 - b^2)*f^2*polylog(3, 1/2*(-2*I*a*cos(d*x +
c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 -
b^2)/b^2))/b) + 4*(a^2 - b^2)*f^2*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a
*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
))/b) - (2*b^2*d^2*f^2*x^2 + 4*b^2*d^2*e*f*x + 2*b^2*d^2*e^2 - b^2*f^2)*cos
(d*x + c)^2 - 8*(a*b*d*f^2*x + a*b*d*e*f)*cos(d*x + c) - (-4*I*(a^2 - b^2)*
d*f^2*x - 4*I*(a^2 - b^2)*d*e*f)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d
*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*
b)/b + 1) - (-4*I*(a^2 - b^2)*d*f^2*x - 4*I*(a^2 - b^2)*d*e*f)*dilog(-1/2*(
2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c
))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (4*I*(a^2 - b^2)*d*f^2*x + 4*I*(a
^2 - b^2)*d*e*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*
cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (4*
I*(a^2 - b^2)*d*f^2*x + 4*I*(a^2 - b^2)*d*e*f)*dilog(-1/2*(-2*I*a*cos(d*x +
 c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
 b^2)/b^2) + 2*b)/b + 1) + 2*((a^2 - b^2)*d^2*e^2 - 2*(a^2 - b^2)*c*d*e*f +
 (a^2 - b^2)*c^2*f^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(
-(a^2 - b^2)/b^2) + 2*I*a) + 2*((a^2 - b^2)*d^2*e^2 - 2*(a^2 - b^2)*c*d*e*f
 + (a^2 - b^2)*c^2*f^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqr
t(-(a^2 - b^2)/b^2) - 2*I*a) + 2*((a^2 - b^2)*d^2*e^2 - 2*(a^2 - b^2)*c*d*e
*f + (a^2 - b^2)*c^2*f^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*
sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*((a^2 - b^2)*d^2*e^2 - 2*(a^2 - b^2)*c*
d*e*f + (a^2 - b^2)*c^2*f^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2
*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 -
b^2)*d^2*e*f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(1/2*(2*I*
a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2
)*d^2*e*f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(1/2*(2*I*a*c
os(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2)*d
^2*e*f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(1/2*(-2*I*a*cos
(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-
(a^2 - b^2)/b^2) + 2*b)/b) + 2*((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2)*d^2
*e*f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(1/2*(-2*I*a*cos(d
*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2) + 2*b)/b) - 2*(2*a*b*d^2*f^2*x^2 + 4*a*b*d^2*e*f*x + 2*a*b*d
^2*e^2 - 4*a*b*f^2 - (b^2*d*f^2*x + b^2*d*e*f)*cos(d*x + c))*sin(d*x + c))/
(b^3*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\cos\left(dx+c\right)^{3}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cos(d*x + c)^3/(b*sin(d*x + c) + a), x)
```

maple [F] time = 2.68, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\left(\cos^{3}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)^3/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cos(d*x+c)^3/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)**3/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.304 $\int \frac{(e+fx)\cos^3(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=351

$$\frac{if\left(a^2-b^2\right)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^2}+\frac{if\left(a^2-b^2\right)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b^3d^2}-\frac{\left(a^2-b^2\right)(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d}-\frac{\left(a^2-b^2\right)(e+fx)}{b}$$

```
[Out] 1/4*f*x/b/d+1/2*I*(a^2-b^2)*(f*x+e)^2/b^3/f+a*f*cos(d*x+c)/b^2/d^2-(a^2-b^2
)*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^3/d-(a^2-b^2)*(f*x
+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^3/d+I*(a^2-b^2)*f*polylo
g(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b^3/d^2+I*(a^2-b^2)*f*polylog(2
,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b^3/d^2+a*(f*x+e)*sin(d*x+c)/b^2/d
-1/4*f*cos(d*x+c)*sin(d*x+c)/b/d^2-1/2*(f*x+e)*sin(d*x+c)^2/b/d
```

Rubi [A] time = 0.41, antiderivative size = 351, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {4525, 3296, 2638, 4404, 2635, 8, 4519, 2190, 2279, 2391}

$$\frac{if\left(a^2-b^2\right)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d^2}+\frac{if\left(a^2-b^2\right)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{b^3d^2}-\frac{\left(a^2-b^2\right)(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d}-$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (f*x)/(4*b*d) + ((I/2)*(a^2 - b^2)*(e + f*x)^2)/(b^3*f) + (a*f*Cos[c + d*x]
)/(b^2*d^2) - ((a^2 - b^2)*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqr
t[a^2 - b^2])])/(b^3*d) - ((a^2 - b^2)*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x
)))/(a + Sqrt[a^2 - b^2])])/(b^3*d) + (I*(a^2 - b^2)*f*PolyLog[2, (I*b*E^(I
*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b^3*d^2) + (I*(a^2 - b^2)*f*PolyLog[2
, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b^3*d^2) + (a*(e + f*x)*Si
n[c + d*x])/(b^2*d) - (f*Cos[c + d*x]*Sin[c + d*x])/(4*b*d^2) - ((e + f*x)*
Sin[c + d*x]^2)/(2*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
```

```
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
```

```
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cos^3(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{a\int (e+fx)\cos(c+dx)\,dx}{b^2} - \frac{\int (e+fx)\cos(c+dx)\sin(c+dx)\,dx}{b} - \frac{\left(a^2-b^2\right)\int \frac{(e\cdot}{a}}{b}$$

$$= \frac{i\left(a^2-b^2\right)(e+fx)^2}{2b^3f} + \frac{a(e+fx)\sin(c+dx)}{b^2d} - \frac{(e+fx)\sin^2(c+dx)}{2bd} - \frac{\left(a^2-b^2\right)\int}{}$$

$$= \frac{i\left(a^2-b^2\right)(e+fx)^2}{2b^3f} + \frac{af\cos(c+dx)}{b^2d^2} - \frac{\left(a^2-b^2\right)(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b^3d} - \frac{(a}{}$$

$$= \frac{fx}{4bd} + \frac{i\left(a^2-b^2\right)(e+fx)^2}{2b^3f} + \frac{af\cos(c+dx)}{b^2d^2} - \frac{\left(a^2-b^2\right)(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right.}{b^3d}$$

$$= \frac{fx}{4bd} + \frac{i\left(a^2-b^2\right)(e+fx)^2}{2b^3f} + \frac{af\cos(c+dx)}{b^2d^2} - \frac{\left(a^2-b^2\right)(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right.}{b^3d}$$

Mathematica [B] time = 14.66, size = 2165, normalized size = 6.17

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Cos[c + d*x]^3)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (a*f*Cos[c + d*x])/(b^2*d^2) + ((d*e - c*f + f*(c + d*x))*Cos[2*(c + d*x)])
/(4*b*d^2) + (a*(d*e - c*f + f*(c + d*x))*Sin[c + d*x])/(b^2*d^2) - (f*Sin[
2*(c + d*x)])/(8*b*d^2) + ((f*(c + d*x)^2 + (2*I)*d*e*Log[Sec[(c + d*x)/2]^
```

```
2] - (2*I)*c*f*Log[Sec[(c + d*x)/2]^2] - (2*I)*d*e*Log[Sec[(c + d*x)/2]^2*(
a + b*Sin[c + d*x])] + (2*I)*c*f*Log[Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x]
)] - (4*I)*f*(c + d*x)*Log[(-2*I)/(-I + Tan[(c + d*x)/2])] - 2*f*Log[1 + I*
Tan[(c + d*x)/2]]*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b
- Sqrt[-a^2 + b^2])] + 2*f*Log[1 - I*Tan[(c + d*x)/2]]*Log[-((b - Sqrt[-a^2
 + b^2] + a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2]))] + 2*f*Log[1 -
I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((-I)*a
 + b + Sqrt[-a^2 + b^2])] - 2*f*Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-
a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])] + 4*f*PolyLo
g[2, -Cos[c + d*x] + I*Sin[c + d*x]] + 2*f*PolyLog[2, (a*(1 - I*Tan[(c + d*
x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))] - 2*f*PolyLog[2, (a*(1 + I*Tan[(c +
 d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))] + 2*f*PolyLog[2, (a*(I + Tan[(c
+ d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])] - 2*f*PolyLog[2, (a + I*a*Tan[(c
+ d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))])*((e*Cos[c + d*x])/(a + b*Sin[c
 + d*x]) - (a^2*e*Cos[c + d*x])/(b^2*(a + b*Sin[c + d*x])) - (c*f*Cos[c + d
*x])/(d*(a + b*Sin[c + d*x])) + (a^2*c*f*Cos[c + d*x])/(b^2*d*(a + b*Sin[c
+ d*x])) + (f*(c + d*x)*Cos[c + d*x])/(d*(a + b*Sin[c + d*x])) - (a^2*f*(c
+ d*x)*Cos[c + d*x])/(b^2*d*(a + b*Sin[c + d*x]))))/(d*(2*f*(c + d*x) - (4*
I)*f*Log[(-2*I)/(-I + Tan[(c + d*x)/2])] - (4*f*Log[1 + Cos[c + d*x] - I*Si
n[c + d*x]]*(I*Cos[c + d*x] + Sin[c + d*x]))/(-Cos[c + d*x] + I*Sin[c + d*x
]) + (I*f*Log[1 - (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]
))]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) - (I*f*Log[-((b - Sqrt[-a^
2 + b^2] + a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)
/2]^2)/(1 - I*Tan[(c + d*x)/2]) - (I*f*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c
 + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 - I*Tan
[(c + d*x)/2]) + (I*f*Log[1 - (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt
[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) - (I*f*Log[(b
- Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])]*Sec[
(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) - (I*f*Log[(b + Sqrt[-a^2 + b^2] +
 a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 +
 I*Tan[(c + d*x)/2]) + (2*I)*d*e*Tan[(c + d*x)/2] - (2*I)*c*f*Tan[(c + d*x)
/2] + ((2*I)*f*(c + d*x)*Sec[(c + d*x)/2]^2)/(-I + Tan[(c + d*x)/2]) - (f*L
og[1 - (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])]*Sec[(c + d*
x)/2]^2)/(I + Tan[(c + d*x)/2]) + (I*a*f*Log[1 - (a + I*a*Tan[(c + d*x)/2])
/(a + I*(-b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(a + I*a*Tan[(c + d*x
)/2]) + (a*f*Log[1 - I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b - Sqrt[-a^2
 + b^2] + a*Tan[(c + d*x)/2]) - (a*f*Log[1 + I*Tan[(c + d*x)/2]]*Sec[(c + d
*x)/2]^2)/(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) + (a*f*Log[1 - I*Tan[
(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2
]) - (a*f*Log[1 + I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b + Sqrt[-a^2 +
b^2] + a*Tan[(c + d*x)/2]) - ((2*I)*d*e*Cos[(c + d*x)/2]^2*(b*Cos[c + d*x]*
Sec[(c + d*x)/2]^2 + Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c + d*x)/
2]))/(a + b*Sin[c + d*x]) + ((2*I)*c*f*Cos[(c + d*x)/2]^2*(b*Cos[c + d*x]*S
ec[(c + d*x)/2]^2 + Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c + d*x)/2
]))/(a + b*Sin[c + d*x])))
```

fricas [B] time = 0.72, size = 1045, normalized size = 2.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(b^2*d*f*x - 4*a*b*f*cos(d*x + c) - 2*(b^2*d*f*x + b^2*d*e)*cos(d*x +
c)^2 + 2*I*(a^2 - b^2)*f*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c)
+ 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1
) + 2*I*(a^2 - b^2)*f*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2
*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) -
 2*I*(a^2 - b^2)*f*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(
b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2
*I*(a^2 - b^2)*f*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*
cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(
(a^2 - b^2)*d*e - (a^2 - b^2)*c*f)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c
) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*((a^2 - b^2)*d*e - (a^2 - b^2)*
c*f)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2)
 - 2*I*a) + 2*((a^2 - b^2)*d*e - (a^2 - b^2)*c*f)*log(-2*b*cos(d*x + c) + 2
*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*((a^2 - b^2)*d*
e - (a^2 - b^2)*c*f)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(
-(a^2 - b^2)/b^2) - 2*I*a) + 2*((a^2 - b^2)*d*f*x + (a^2 - b^2)*c*f)*log(1/
2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*((a^2 - b^2)*d*f*x + (a^2 - b^2)
*c*f)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) -
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*((a^2 - b^2)*d*f*x +
 (a^2 - b^2)*c*f)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*((a^2 -
 b^2)*d*f*x + (a^2 - b^2)*c*f)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x +
 c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
) - (4*a*b*d*f*x + 4*a*b*d*e - b^2*f*cos(d*x + c))*sin(d*x + c))/(b^3*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\cos\left(dx+c\right)^{3}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cos(d*x + c)^3/(b*sin(d*x + c) + a), x)
```

maple [B] time = 1.18, size = 1750, normalized size = 4.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int((f*x+e)*cos(d*x+c)^3/(a+b*sin(d*x+c)),x)

[Out] -1/d/b^3*a^2*e*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)+2/d/b^3*a^2*e*ln(exp(I*(d*x+c)))-1/d^2/b*f*c*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)+2/d^2/b*f*c*ln(exp(I*(d*x+c)))-I/d^2/b*f*c^2+1/d/b*e*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)-2/d/b*ln(exp(I*(d*x+c)))*e-1/2*I/b*f*x^2+I/b*e*x-2/d/b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*a^2*x-2/d^2/b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*a^2*c-2/d/b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a^2*x-2/d^2/b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a^2*c+1/d*b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x+1/d^2*b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c+1/d*b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x+1/d^2*b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-I/d^2*b*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-I/d^2*b*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))-2*I/d/b*f*c*x+I/d^2/b^3*a^2*f*c^2+1/d^2/b^3*a^2*f*c*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)-2/d^2/b^3*a^2*f*c*ln(exp(I*(d*x+c)))-1/2*I*a*(d*f*x+I*f+d*e)/d^2/b^2*exp(I*(d*x+c))+1/2*I*a*(d*f*x-I*f+d*e)/d^2/b^2*exp(-I*(d*x+c))+1/16*(2*d*f*x+I*f+2*d*e)/b/d^2*exp(2*I*(d*x+c))+1/16*(2*d*f*x-I*f+2*d*e)/b/d^2*exp(-2*I*(d*x+c))-I/b^3*a^2*e*x+1/2*I/b^3*a^2*f*x^2+1/d/b^3*a^4*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x+1/d^2/b^3*a^4*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c+1/d/b^3*a^4*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x+1/d^2/b^3*a^4*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c+2*I/d/b^3*a^2*f*c*x-I/d^2/b^3*a^4*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-I/d^2/b^3*a^4*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))+2*I/d^2/b*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a^2+2*I/d^2/b*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*a^2

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((f*x+e)*cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="maxima")

[Out] Exception raised: ValueError >> Computation failed since Maxima requested additional constraints; using the 'assume' command before evaluation *may* h

```
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*(e + f*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)**3/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.305 $\int \frac{\cos^3(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=61

$$-\frac{(a^2-b^2)\log(a+b\sin(c+dx))}{b^3d}+\frac{a\sin(c+dx)}{b^2d}-\frac{\sin^2(c+dx)}{2bd}$$

```
[Out] -(a^2-b^2)*ln(a+b*sin(d*x+c))/b^3/d+a*sin(d*x+c)/b^2/d-1/2*sin(d*x+c)^2/b/d
```

Rubi [A] time = 0.07, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {2668, 697}

$$-\frac{(a^2-b^2)\log(a+b\sin(c+dx))}{b^3d}+\frac{a\sin(c+dx)}{b^2d}-\frac{\sin^2(c+dx)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[Cos[c + d*x]^3/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(((a^2 - b^2)*Log[a + b*Sin[c + d*x]])/(b^3*d)) + (a*Sin[c + d*x])/(b^2*d)
 - Sin[c + d*x]^2/(2*b*d)
```

Rule 697

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[
ExpandIntegrand[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, m},
 x] && NeQ[c*d^2 + a*e^2, 0] && IGtQ[p, 0]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\cos^3(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{b^2-x^2}{a+x}\,dx, x, b\sin(c+dx)\right)}{b^3d}$$
$$= \frac{\text{Subst}\left(\int \left(a-x+\frac{-a^2+b^2}{a+x}\right)dx, x, b\sin(c+dx)\right)}{b^3d}$$
$$= -\frac{\left(a^2-b^2\right)\log(a+b\sin(c+dx))}{b^3d} + \frac{a\sin(c+dx)}{b^2d} - \frac{\sin^2(c+dx)}{2bd}$$

Mathematica [A] time = 0.08, size = 54, normalized size = 0.89

$$\frac{-\left(a^2-b^2\right)\log(a+b\sin(c+dx))+ab\sin(c+dx)-\frac{1}{2}b^2\sin^2(c+dx)}{b^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[Cos[c + d*x]^3/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-((a^2 - b^2)*Log[a + b*Sin[c + d*x]]) + a*b*Sin[c + d*x] - (b^2*Sin[c + d
*x]^2)/2)/(b^3*d)
```

fricas [A] time = 0.45, size = 53, normalized size = 0.87

$$\frac{b^2\cos\left(dx+c\right)^2+2\,ab\sin\left(dx+c\right)-2\left(a^2-b^2\right)\log\left(b\sin\left(dx+c\right)+a\right)}{2\,b^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*cos(d*x + c)^2 + 2*a*b*sin(d*x + c) - 2*(a^2 - b^2)*log(b*sin(d*x
+ c) + a))/(b^3*d)
```

giac [A] time = 0.73, size = 56, normalized size = 0.92

$$-\frac{\frac{b\sin(dx+c)^2-2\,a\sin(dx+c)}{b^2}+\frac{2\left(a^2-b^2\right)\log(|b\sin(dx+c)+a|)}{b^3}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*((b*sin(d*x + c)^2 - 2*a*sin(d*x + c))/b^2 + 2*(a^2 - b^2)*log(abs(b*s
in(d*x + c) + a))/b^3)/d
```

maple [A] time = 0.00, size = 72, normalized size = 1.18

$$-\frac{\sin^2(dx+c)}{2bd}+\frac{a\sin(dx+c)}{b^2d}-\frac{\ln(a+b\sin(dx+c))\,a^2}{d\,b^3}+\frac{\ln(a+b\sin(dx+c))}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^3/(a+b*sin(d*x+c)),x)
```

```
[Out] -1/2*sin(d*x+c)^2/b/d+a*sin(d*x+c)/b^2/d-1/d/b^3*ln(a+b*sin(d*x+c))*a^2+ln(
a+b*sin(d*x+c))/b/d
```

maxima [A] time = 0.41, size = 55, normalized size = 0.90

$$-\frac{\frac{b\sin(dx+c)^2-2\,a\sin(dx+c)}{b^2}+\frac{2\left(a^2-b^2\right)\log(b\sin(dx+c)+a)}{b^3}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*((b*sin(d*x + c)^2 - 2*a*sin(d*x + c))/b^2 + 2*(a^2 - b^2)*log(b*sin(d
*x + c) + a)/b^3)/d
```

mupad [B] time = 0.09, size = 55, normalized size = 0.90

$$-\frac{\frac{\sin(c+d\,x)^2}{2\,b}+\frac{\ln(a+b\,\sin(c+d\,x))\left(a^2-b^2\right)}{b^3}-\frac{a\,\sin(c+d\,x)}{b^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(c + d*x)^3/(a + b*sin(c + d*x)),x)
```

```
[Out] -(sin(c + d*x)^2/(2*b) + (log(a + b*sin(c + d*x))*(a^2 - b^2))/b^3 - (a*sin
(c + d*x))/b^2)/d
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**3/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.306 $\int \frac{(e+fx)^3 \sec(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=937

$$-\frac{6ia\text{Li}_4\left(-ie^{i(c+dx)}\right)f^3}{\left(a^2-b^2\right)d^4}+\frac{6ia\text{Li}_4\left(ie^{i(c+dx)}\right)f^3}{\left(a^2-b^2\right)d^4}-\frac{6ib\text{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)f^3}{\left(a^2-b^2\right)d^4}-\frac{6ib\text{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)f^3}{\left(a^2-b^2\right)d^4}+\frac{3ib\text{Li}_4\left(-e^{2i(c+dx)}\right)f^3}{4\left(a^2-b^2\right)d^4}-$$

```
[Out] 3*I*a*f*(f*x+e)^2*polylog(2,-I*exp(I*(d*x+c)))/(a^2-b^2)/d^2+b*(f*x+e)^3*ln
(1+exp(2*I*(d*x+c)))/(a^2-b^2)/d-b*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^
2-b^2)^(1/2)))/(a^2-b^2)/d-b*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)
^(1/2)))/(a^2-b^2)/d+3*I*b*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2
-b^2)^(1/2)))/(a^2-b^2)/d^2-6*I*b*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-
b^2)^(1/2)))/(a^2-b^2)/d^4-2*I*a*(f*x+e)^3*arctan(exp(I*(d*x+c)))/(a^2-b^2)
/d+6*I*a*f^3*polylog(4,I*exp(I*(d*x+c)))/(a^2-b^2)/d^4+3/4*I*b*f^3*polylog(
4,-exp(2*I*(d*x+c)))/(a^2-b^2)/d^4-6*a*f^2*(f*x+e)*polylog(3,-I*exp(I*(d*x+
c)))/(a^2-b^2)/d^3+6*a*f^2*(f*x+e)*polylog(3,I*exp(I*(d*x+c)))/(a^2-b^2)/d^
3+3/2*b*f^2*(f*x+e)*polylog(3,-exp(2*I*(d*x+c)))/(a^2-b^2)/d^3-6*b*f^2*(f*x
+e)*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)/d^3-6*b*f^2
*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)/d^3-3*
I*a*f*(f*x+e)^2*polylog(2,I*exp(I*(d*x+c)))/(a^2-b^2)/d^2-6*I*a*f^3*polylog
(4,-I*exp(I*(d*x+c)))/(a^2-b^2)/d^4-6*I*b*f^3*polylog(4,I*b*exp(I*(d*x+c))/
(a-(a^2-b^2)^(1/2)))/(a^2-b^2)/d^4+3*I*b*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d
*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)/d^2-3/2*I*b*f*(f*x+e)^2*polylog(2,-ex
p(2*I*(d*x+c)))/(a^2-b^2)/d^2
```

Rubi [A] time = 1.62, antiderivative size = 937, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 10, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {4533, 4519, 2190, 2531, 6609, 2282, 6589, 6742, 4181, 3719}

$$-\frac{6ia\text{PolyLog}\left(4,-ie^{i(c+dx)}\right)f^3}{\left(a^2-b^2\right)d^4}+\frac{6ia\text{PolyLog}\left(4,ie^{i(c+dx)}\right)f^3}{\left(a^2-b^2\right)d^4}-\frac{6ib\text{PolyLog}\left(4,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)f^3}{\left(a^2-b^2\right)d^4}-\frac{6ib\text{PolyLog}\left(4,\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d^4}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sec[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-2*I)*a*(e + f*x)^3*ArcTan[E^(I*(c + d*x))])/((a^2 - b^2)*d) - (b*(e + f*
x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)*d)
- (b*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/((a^
2 - b^2)*d) + (b*(e + f*x)^3*Log[1 + E^((2*I)*(c + d*x))])/((a^2 - b^2)*d)
+ ((3*I)*a*f*(e + f*x)^2*PolyLog[2, (-I)*E^(I*(c + d*x))])/((a^2 - b^2)*d^2
```

```
) - ((3*I)*a*f*(e + f*x)^2*PolyLog[2, I*E^(I*(c + d*x))])/((a^2 - b^2)*d^2)
 + ((3*I)*b*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 -
b^2])])/((a^2 - b^2)*d^2) + ((3*I)*b*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c
+ d*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)*d^2) - (((3*I)/2)*b*f*(e + f*
x)^2*PolyLog[2, -E^((2*I)*(c + d*x))])/((a^2 - b^2)*d^2) - (6*a*f^2*(e + f*
x)*PolyLog[3, (-I)*E^(I*(c + d*x))])/((a^2 - b^2)*d^3) + (6*a*f^2*(e + f*x)
*PolyLog[3, I*E^(I*(c + d*x))])/((a^2 - b^2)*d^3) - (6*b*f^2*(e + f*x)*Poly
Log[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)*d^3) - (6
*b*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(
(a^2 - b^2)*d^3) + (3*b*f^2*(e + f*x)*PolyLog[3, -E^((2*I)*(c + d*x))])/(2*
(a^2 - b^2)*d^3) - ((6*I)*a*f^3*PolyLog[4, (-I)*E^(I*(c + d*x))])/((a^2 - b
^2)*d^4) + ((6*I)*a*f^3*PolyLog[4, I*E^(I*(c + d*x))])/((a^2 - b^2)*d^4) -
((6*I)*b*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/((a^2
 - b^2)*d^4) - ((6*I)*b*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2
- b^2])])/((a^2 - b^2)*d^4) + (((3*I)/4)*b*f^3*PolyLog[4, -E^((2*I)*(c + d*
x))])/((a^2 - b^2)*d^4)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
```

```
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4533

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[b^2/(a^2 - b^2), Int[((e + f
*x)^m*Sec[c + d*x]^(n - 2))/(a + b*Sin[c + d*x]), x], x] + Dist[1/(a^2 - b^
2), Int[(e + f*x)^m*Sec[c + d*x]^n*(a - b*Sin[c + d*x]), x], x] /; FreeQ[{a
, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 - b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\sec(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\sec(c+dx)(a-b\sin(c+dx))\,dx}{a^2-b^2} - \frac{b^2\int \frac{(e+fx)^3\cos(c+dx)}{a+b\sin(c+dx)}\,dx}{a^2-b^2}$$

$$= \frac{ib(e+fx)^4}{4\left(a^2-b^2\right)f} + \frac{\int \left(a(e+fx)^3\sec(c+dx)-b(e+fx)^3\tan(c+dx)\right)dx}{a^2-b^2} - \frac{b^2\int \frac{e}{a-\sqrt{}}}{}$$

$$= \frac{ib(e+fx)^4}{4\left(a^2-b^2\right)f} - \frac{b(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} + \cdots$$

$$= -\frac{2ia(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1\cdots\right.}{\left(a^2-b^2\right.}$$

$$= -\frac{2ia(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1\cdots\right.}{\left(a^2-b^2\right.}$$

$$= -\frac{2ia(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1\cdots\right.}{\left(a^2-b^2\right.}$$

$$= -\frac{2ia(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1\cdots\right.}{\left(a^2-b^2\right.}$$

$$= -\frac{2ia(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1\cdots\right.}{\left(a^2-b^2\right.}$$

$$= -\frac{2ia(e+fx)^3\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^3\log\left(1\cdots\right.}{\left(a^2-b^2\right.}$$

Mathematica [B] time = 10.03, size = 2496, normalized size = 2.66

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Sec[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((4*((I*b*(e + f*x)^4)/f - (2*(a - b)*(1 + E^((2*I)*c))*(e + f*x)^3*Log[1 -
 I/E^(I*(c + d*x))])/d + (2*(a + b)*(1 + E^((2*I)*c))*(e + f*x)^3*Log[1 + I
/E^(I*(c + d*x))])/d + (6*(a + b)*(1 + E^((2*I)*c))*f*(I*d^2*(e + f*x)^2*Po
lyLog[2, (-I)/E^(I*(c + d*x))] + 2*f*(d*(e + f*x)*PolyLog[3, (-I)/E^(I*(c +
 d*x))] - I*f*PolyLog[4, (-I)/E^(I*(c + d*x))])))/d^4 - ((6*I)*(a - b)*(1 +
 E^((2*I)*c))*f*(d^2*(e + f*x)^2*PolyLog[2, I/E^(I*(c + d*x))] - (2*I)*d*f*
(e + f*x)*PolyLog[3, I/E^(I*(c + d*x))] - 2*f^2*PolyLog[4, I/E^(I*(c + d*x)
)]))/d^4))/((a^2 - b^2)*(1 + E^((2*I)*c))) + (4*b*((-4*I)*d^4*e^3*E^((2*I)*
c)*x - (6*I)*d^4*e^2*E^((2*I)*c)*f*x^2 - (4*I)*d^4*e*E^((2*I)*c)*f^2*x^3 -
I*d^4*E^((2*I)*c)*f^3*x^4 - (2*I)*d^3*e^3*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(
-1 + E^((2*I)*(c + d*x))))] + (2*I)*d^3*e^3*E^((2*I)*c)*ArcTan[(2*a*E^(I*(c
 + d*x)))/(b*(-1 + E^((2*I)*(c + d*x))))] - d^3*e^3*Log[4*a^2*E^((2*I)*(c +
 d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2] + d^3*e^3*E^((2*I)*c)*Log[4*a^2*
E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2] - 6*d^3*e^2*f*x*Log
[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])]
+ 6*d^3*e^2*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sq
rt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^3*e*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x
)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e*E^((2*I)*c)*f
^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2
*I)*c)])] - 2*d^3*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt
[(-a^2 + b^2)*E^((2*I)*c)])] + 2*d^3*E^((2*I)*c)*f^3*x^3*Log[1 + (b*E^(I*(2
*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^3*e^2*f*x
*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)
])] + 6*d^3*e^2*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c)
+ Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^3*e*f^2*x^2*Log[1 + (b*E^(I*(2*c +
 d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e*E^((2*I)*
c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E
^((2*I)*c)])] - 2*d^3*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) +
Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 2*d^3*E^((2*I)*c)*f^3*x^3*Log[1 + (b*E^(
I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - (6*I)*d^2
*(-1 + E^((2*I)*c))*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(2*c + d*x)))/(a*E^(
I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - (6*I)*d^2*(-1 + E^((2*I)*c))*f*
(e + f*x)^2*PolyLog[2, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 +
b^2)*E^((2*I)*c)]))] - 12*d*e*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(
I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*d*e*E^((2*I)*c)*f^2*PolyLog[
3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])]
- 12*d*f^3*x*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 +
 b^2)*E^((2*I)*c)])] + 12*d*E^((2*I)*c)*f^3*x*PolyLog[3, (I*b*E^(I*(2*c + d
*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*d*e*f^2*PolyLog[
3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))]
 + 12*d*e*E^((2*I)*c)*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) +
 Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] - 12*d*f^3*x*PolyLog[3, -((b*E^(I*(2*c +
 d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + 12*d*E^((2*I)*c)
*f^3*x*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*
E^((2*I)*c)]))] - (12*I)*f^3*PolyLog[4, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c)
```

```
+ I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + (12*I)*E^((2*I)*c)*f^3*PolyLog[4, (I
*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - (12
*I)*f^3*PolyLog[4, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)
*E^((2*I)*c)]))] + (12*I)*E^((2*I)*c)*f^3*PolyLog[4, -((b*E^(I*(2*c + d*x))
)/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))]))/((-a^2 + b^2)*d^4*(-1
+ E^((2*I)*c))) - (8*b*x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3)*Csc[c]
^3)/((a - b)*(a + b)*(Csc[c/2] - Sec[c/2])*(Csc[c/2] + Sec[c/2])))/8
```

fricas [C] time = 0.75, size = 3081, normalized size = 3.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(6*I*b*f^3*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(
b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6*I*b*f^3*p
olylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) +
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*I*b*f^3*polylog(4, 1/2*(-2
*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2))/b) - 6*I*b*f^3*polylog(4, 1/2*(-2*I*a*cos(d*x + c
) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b
^2)/b^2))/b) - 6*I*(a - b)*f^3*polylog(4, I*cos(d*x + c) + sin(d*x + c)) -
6*I*(a + b)*f^3*polylog(4, I*cos(d*x + c) - sin(d*x + c)) + 6*I*(a - b)*f^3
*polylog(4, -I*cos(d*x + c) + sin(d*x + c)) + 6*I*(a + b)*f^3*polylog(4, -I
*cos(d*x + c) - sin(d*x + c)) + (3*I*b*d^2*f^3*x^2 + 6*I*b*d^2*e*f^2*x + 3*
I*b*d^2*e^2*f)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos
(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (3*I*b
*d^2*f^3*x^2 + 6*I*b*d^2*e*f^2*x + 3*I*b*d^2*e^2*f)*dilog(-1/2*(2*I*a*cos(d
*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2) + 2*b)/b + 1) + (-3*I*b*d^2*f^3*x^2 - 6*I*b*d^2*e*f^2*x - 3*
I*b*d^2*e^2*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-3*I
*b*d^2*f^3*x^2 - 6*I*b*d^2*e*f^2*x - 3*I*b*d^2*e^2*f)*dilog(-1/2*(-2*I*a*co
s(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (3*I*(a - b)*d^2*f^3*x^2 + 6*I*(a - b)*d^
2*e*f^2*x + 3*I*(a - b)*d^2*e^2*f)*dilog(I*cos(d*x + c) + sin(d*x + c)) + (
3*I*(a + b)*d^2*f^3*x^2 + 6*I*(a + b)*d^2*e*f^2*x + 3*I*(a + b)*d^2*e^2*f)*
dilog(I*cos(d*x + c) - sin(d*x + c)) + (-3*I*(a - b)*d^2*f^3*x^2 - 6*I*(a -
 b)*d^2*e*f^2*x - 3*I*(a - b)*d^2*e^2*f)*dilog(-I*cos(d*x + c) + sin(d*x +
c)) + (-3*I*(a + b)*d^2*f^3*x^2 - 6*I*(a + b)*d^2*e*f^2*x - 3*I*(a + b)*d^2
*e^2*f)*dilog(-I*cos(d*x + c) - sin(d*x + c)) + (b*d^3*e^3 - 3*b*c*d^2*e^2*
f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c)
+ 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*
c^2*d*e*f^2 - b*c^3*f^3)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sq
```

```
rt(-(a^2 - b^2)/b^2) - 2*I*a) + (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*
f^2 - b*c^3*f^3)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^
2 - b^2)/b^2) + 2*I*a) + (b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b
*c^3*f^3)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2
)/b^2) - 2*I*a) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*
b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*log(1/2*(2*I*a*cos(d*x + c) +
2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/
b^2) + 2*b)/b) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b
*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*log(1/2*(2*I*a*cos(d*x + c) + 2
*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2) + 2*b)/b) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*
c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*log(1/2*(-2*I*a*cos(d*x + c) + 2
*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2) + 2*b)/b) + (b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*
c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*log(1/2*(-2*I*a*cos(d*x + c) + 2
*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2) + 2*b)/b) - ((a + b)*d^3*e^3 - 3*(a + b)*c*d^2*e^2*f + 3*(a + b)*c^2*d*
e*f^2 - (a + b)*c^3*f^3)*log(cos(d*x + c) + I*sin(d*x + c) + I) + ((a - b)*
d^3*e^3 - 3*(a - b)*c*d^2*e^2*f + 3*(a - b)*c^2*d*e*f^2 - (a - b)*c^3*f^3)*
log(cos(d*x + c) - I*sin(d*x + c) + I) - ((a + b)*d^3*f^3*x^3 + 3*(a + b)*d
^3*e*f^2*x^2 + 3*(a + b)*d^3*e^2*f*x + 3*(a + b)*c*d^2*e^2*f - 3*(a + b)*c^
2*d*e*f^2 + (a + b)*c^3*f^3)*log(I*cos(d*x + c) + sin(d*x + c) + 1) + ((a -
 b)*d^3*f^3*x^3 + 3*(a - b)*d^3*e*f^2*x^2 + 3*(a - b)*d^3*e^2*f*x + 3*(a -
b)*c*d^2*e^2*f - 3*(a - b)*c^2*d*e*f^2 + (a - b)*c^3*f^3)*log(I*cos(d*x + c
) - sin(d*x + c) + 1) - ((a + b)*d^3*f^3*x^3 + 3*(a + b)*d^3*e*f^2*x^2 + 3*
(a + b)*d^3*e^2*f*x + 3*(a + b)*c*d^2*e^2*f - 3*(a + b)*c^2*d*e*f^2 + (a +
b)*c^3*f^3)*log(-I*cos(d*x + c) + sin(d*x + c) + 1) + ((a - b)*d^3*f^3*x^3
+ 3*(a - b)*d^3*e*f^2*x^2 + 3*(a - b)*d^3*e^2*f*x + 3*(a - b)*c*d^2*e^2*f -
 3*(a - b)*c^2*d*e*f^2 + (a - b)*c^3*f^3)*log(-I*cos(d*x + c) - sin(d*x + c
) + 1) - ((a + b)*d^3*e^3 - 3*(a + b)*c*d^2*e^2*f + 3*(a + b)*c^2*d*e*f^2 -
 (a + b)*c^3*f^3)*log(-cos(d*x + c) + I*sin(d*x + c) + I) + ((a - b)*d^3*e^
3 - 3*(a - b)*c*d^2*e^2*f + 3*(a - b)*c^2*d*e*f^2 - (a - b)*c^3*f^3)*log(-c
os(d*x + c) - I*sin(d*x + c) + I) + 6*(b*d*f^3*x + b*d*e*f^2)*polylog(3, 1/
2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6*(b*d*f^3*x + b*d*e*f^2)*polylog(3, 1/2
*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6*(b*d*f^3*x + b*d*e*f^2)*polylog(3, 1/2*
(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6*(b*d*f^3*x + b*d*e*f^2)*polylog(3, 1/2*
(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6*((a - b)*d*f^3*x + (a - b)*d*e*f^2)*pol
ylog(3, I*cos(d*x + c) + sin(d*x + c)) - 6*((a + b)*d*f^3*x + (a + b)*d*e*f
^2)*polylog(3, I*cos(d*x + c) - sin(d*x + c)) + 6*((a - b)*d*f^3*x + (a - b
)*d*e*f^2)*polylog(3, -I*cos(d*x + c) + sin(d*x + c)) - 6*((a + b)*d*f^3*x
+ (a + b)*d*e*f^2)*polylog(3, -I*cos(d*x + c) - sin(d*x + c)))/((a^2 - b^2)
```

```
*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \sec(dx+c)}{b\sin(dx+c)+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*sec(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [F] time = 1.66, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \sec(dx+c)}{a+b\sin(dx+c)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cos(c + d*x)*(a + b*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e + fx)^3 \sec(c + dx)}{a + b\sin(c + dx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*sec(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.307 $\int \frac{(e+fx)^2 \sec(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=667

$$-\frac{2af^2\text{Li}_3\left(-ie^{i(c+dx)}\right)}{d^3\left(a^2-b^2\right)}+\frac{2af^2\text{Li}_3\left(ie^{i(c+dx)}\right)}{d^3\left(a^2-b^2\right)}-\frac{2bf^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{d^3\left(a^2-b^2\right)}-\frac{2bf^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{d^3\left(a^2-b^2\right)}+\frac{bf^2\text{Li}_3\left(-e^{2i(c+dx)}\right)}{2d^3\left(a^2-b^2\right)}+\frac{2iaf}{}$$

```
[Out] -2*I*a*(f*x+e)^2*arctan(exp(I*(d*x+c)))/(a^2-b^2)/d+b*(f*x+e)^2*ln(1+exp(2*
I*(d*x+c)))/(a^2-b^2)/d-b*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1
/2)))/(a^2-b^2)/d-b*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/
(a^2-b^2)/d+2*I*a*f*(f*x+e)*polylog(2,-I*exp(I*(d*x+c)))/(a^2-b^2)/d^2-2*I*
a*f*(f*x+e)*polylog(2,I*exp(I*(d*x+c)))/(a^2-b^2)/d^2-I*b*f*(f*x+e)*polylog
(2,-exp(2*I*(d*x+c)))/(a^2-b^2)/d^2+2*I*b*f*(f*x+e)*polylog(2,I*b*exp(I*(d*
x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)/d^2+2*I*b*f*(f*x+e)*polylog(2,I*b*exp(
I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)/d^2-2*a*f^2*polylog(3,-I*exp(I*(d
*x+c)))/(a^2-b^2)/d^3+2*a*f^2*polylog(3,I*exp(I*(d*x+c)))/(a^2-b^2)/d^3+1/2
*b*f^2*polylog(3,-exp(2*I*(d*x+c)))/(a^2-b^2)/d^3-2*b*f^2*polylog(3,I*b*exp
(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)/d^3-2*b*f^2*polylog(3,I*b*exp(I*
(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)/d^3
```

Rubi [A] time = 1.14, antiderivative size = 667, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {4533, 4519, 2190, 2531, 2282, 6589, 6742, 4181, 3719}

$$\frac{2iaf(e+fx)\text{PolyLog}\left(2,-ie^{i(c+dx)}\right)}{d^2\left(a^2-b^2\right)}-\frac{2iaf(e+fx)\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{d^2\left(a^2-b^2\right)}+\frac{2ibf(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{d^2\left(a^2-b^2\right)}+$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sec[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-2*I)*a*(e + f*x)^2*ArcTan[E^(I*(c + d*x))])/((a^2 - b^2)*d) - (b*(e + f*
x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)*d)
- (b*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/((a^
2 - b^2)*d) + (b*(e + f*x)^2*Log[1 + E^((2*I)*(c + d*x))])/((a^2 - b^2)*d)
+ ((2*I)*a*f*(e + f*x)*PolyLog[2, (-I)*E^(I*(c + d*x))])/((a^2 - b^2)*d^2)
- ((2*I)*a*f*(e + f*x)*PolyLog[2, I*E^(I*(c + d*x))])/((a^2 - b^2)*d^2) + (
(2*I)*b*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])]
)/((a^2 - b^2)*d^2) + ((2*I)*b*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))
/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)*d^2) - (I*b*f*(e + f*x)*PolyLog[2, -E
^((2*I)*(c + d*x))])/((a^2 - b^2)*d^2) - (2*a*f^2*PolyLog[3, (-I)*E^(I*(c +
 d*x))])/((a^2 - b^2)*d^3) + (2*a*f^2*PolyLog[3, I*E^(I*(c + d*x))])/((a^2
```

```
- b^2)*d^3) - (2*b*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2
])])/((a^2 - b^2)*d^3) - (2*b*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqr
t[a^2 - b^2])])/((a^2 - b^2)*d^3) + (b*f^2*PolyLog[3, -E^((2*I)*(c + d*x))]
)/(2*(a^2 - b^2)*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4533

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[b^2/(a^2 - b^2), Int[((e + f
*x)^m*Sec[c + d*x]^(n - 2))/(a + b*Sin[c + d*x]), x], x] + Dist[1/(a^2 - b^
2), Int[(e + f*x)^m*Sec[c + d*x]^n*(a - b*Sin[c + d*x]), x], x] /; FreeQ[{a
, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 - b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2 \sec(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2 \sec(c+dx)(a-b\sin(c+dx))\,dx}{a^2-b^2} - \frac{b^2 \int \frac{(e+fx)^2 \cos(c+dx)}{a+b\sin(c+dx)}\,dx}{a^2-b^2}$$

$$= \frac{ib(e+fx)^3}{3\left(a^2-b^2\right)f} + \frac{\int \left(a(e+fx)^2 \sec(c+dx) - b(e+fx)^2 \tan(c+dx)\right)dx}{a^2-b^2} - \frac{b^2 \int \frac{e^{i(c}}{a-\sqrt{a}}}{a}$$

$$= \frac{ib(e+fx)^3}{3\left(a^2-b^2\right)f} - \frac{b(e+fx)^2 \log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} + \frac{a}{}$$

$$= -\frac{2ia(e+fx)^2 \tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\right.}{\left(a^2-b^2\right)}$$

$$= -\frac{2ia(e+fx)^2 \tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\right.}{\left(a^2-b^2\right)}$$

$$= -\frac{2ia(e+fx)^2 \tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\right.}{\left(a^2-b^2\right)}$$

$$= -\frac{2ia(e+fx)^2 \tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\right.}{\left(a^2-b^2\right)}$$

$$= -\frac{2ia(e+fx)^2 \tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)^2 \log\left(1-\right.}{\left(a^2-b^2\right)}$$

Mathematica [B] time = 5.86, size = 1561, normalized size = 2.34

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Sec[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((2*(((2*I)*b*(e + f*x)^3)/f - (3*(a - b)*(1 + E^((2*I)*c))*(e + f*x)^2*Log
[1 - I/E^(I*(c + d*x))])/d + (3*(a + b)*(1 + E^((2*I)*c))*(e + f*x)^2*Log[1
 + I/E^(I*(c + d*x))])/d + (6*(a + b)*(1 + E^((2*I)*c))*f*(I*d*(e + f*x)*Po
lyLog[2, (-I)/E^(I*(c + d*x))] + f*PolyLog[3, (-I)/E^(I*(c + d*x))]))/d^3 -
 ((6*I)*(a - b)*(1 + E^((2*I)*c))*f*(d*(e + f*x)*PolyLog[2, I/E^(I*(c + d*x
```

```
))] - I*f*PolyLog[3, I/E^(I*(c + d*x))]))/d^3))/((a^2 - b^2)*(1 + E^((2*I)*
c))) + (b*((-12*I)*d^3*e^2*E^((2*I)*c)*x - (12*I)*d^3*e*E^((2*I)*c)*f*x^2 -
 (4*I)*d^3*E^((2*I)*c)*f^2*x^3 - (6*I)*d^2*e^2*ArcTan[(2*a*E^(I*(c + d*x)))
/(b*(-1 + E^((2*I)*(c + d*x))))] + (6*I)*d^2*e^2*E^((2*I)*c)*ArcTan[(2*a*E^
(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c + d*x))))] - 3*d^2*e^2*Log[4*a^2*E^((2*
I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2] + 3*d^2*e^2*E^((2*I)*c)*L
og[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2] - 12*d^2*e
*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I
)*c)])] + 12*d^2*e*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*
c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^2*f^2*x^2*Log[1 + (b*E^(I*(2*c
+ d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^2*E^((2*I)*c
)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^
((2*I)*c)])] - 12*d^2*e*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sq
rt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*d^2*e*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(
2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^2*f^2*x^
2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c
)])] + 6*d^2*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c)
 + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - (12*I)*d*(-1 + E^((2*I)*c))*f*(e + f*
x)*PolyLog[2, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((
2*I)*c)])] - (12*I)*d*(-1 + E^((2*I)*c))*f*(e + f*x)*PolyLog[2, -((b*E^(I*(
2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] - 12*f^2*Poly
Log[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)
])] + 12*E^((2*I)*c)*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*
Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x))
)/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + 12*E^((2*I)*c)*f^2*Pol
yLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c
)]))])))/((-a^2 + b^2)*d^3*(-1 + E^((2*I)*c))) - (8*b*x*(3*e^2 + 3*e*f*x + f
^2*x^2)*Csc[c]^3)/((a - b)*(a + b)*(Csc[c/2] - Sec[c/2])*(Csc[c/2] + Sec[c/
2])))/6
```

fricas [C] time = 0.67, size = 2041, normalized size = 3.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*f^2*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*
cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*b*f^2*polyl
og(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*
sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*b*f^2*polylog(3, 1/2*(-2*I*a*c
os(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2))/b) + 2*b*f^2*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*
sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
)/b) + 2*(a - b)*f^2*polylog(3, I*cos(d*x + c) + sin(d*x + c)) - 2*(a + b)*
```

```
f^2*polylog(3, I*cos(d*x + c) - sin(d*x + c)) + 2*(a - b)*f^2*polylog(3, -I
*cos(d*x + c) + sin(d*x + c)) - 2*(a + b)*f^2*polylog(3, -I*cos(d*x + c) -
sin(d*x + c)) + (2*I*b*d*f^2*x + 2*I*b*d*e*f)*dilog(-1/2*(2*I*a*cos(d*x + c
) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b
^2)/b^2) + 2*b)/b + 1) + (2*I*b*d*f^2*x + 2*I*b*d*e*f)*dilog(-1/2*(2*I*a*co
s(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-2*I*b*d*f^2*x - 2*I*b*d*e*f)*dilog(-1/2
*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-2*I*b*d*f^2*x - 2*I*b*d*e*f)
*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I
*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (2*I*(a - b)*d*f^2*
x + 2*I*(a - b)*d*e*f)*dilog(I*cos(d*x + c) + sin(d*x + c)) + (2*I*(a + b)*
d*f^2*x + 2*I*(a + b)*d*e*f)*dilog(I*cos(d*x + c) - sin(d*x + c)) + (-2*I*(
a - b)*d*f^2*x - 2*I*(a - b)*d*e*f)*dilog(-I*cos(d*x + c) + sin(d*x + c)) +
 (-2*I*(a + b)*d*f^2*x - 2*I*(a + b)*d*e*f)*dilog(-I*cos(d*x + c) - sin(d*x
 + c)) + (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*log(2*b*cos(d*x + c) + 2*I*b
*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + (b*d^2*e^2 - 2*b*c*d*
e*f + b*c^2*f^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2
 - b^2)/b^2) - 2*I*a) + (b*d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*log(-2*b*cos(
d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + (b*d^
2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c)
 + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2
*b*c*d*e*f - b*c^2*f^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*
(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (b*d
^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*log(1/2*(2*I*a*cos(d*
x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^
2 - b^2)/b^2) + 2*b)/b) + (b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*
c^2*f^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c
) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (b*d^2*f^2*x^2 + 2
*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*
sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
 + 2*b)/b) - ((a + b)*d^2*e^2 - 2*(a + b)*c*d*e*f + (a + b)*c^2*f^2)*log(co
s(d*x + c) + I*sin(d*x + c) + I) + ((a - b)*d^2*e^2 - 2*(a - b)*c*d*e*f + (
a - b)*c^2*f^2)*log(cos(d*x + c) - I*sin(d*x + c) + I) - ((a + b)*d^2*f^2*x
^2 + 2*(a + b)*d^2*e*f*x + 2*(a + b)*c*d*e*f - (a + b)*c^2*f^2)*log(I*cos(d
*x + c) + sin(d*x + c) + 1) + ((a - b)*d^2*f^2*x^2 + 2*(a - b)*d^2*e*f*x +
2*(a - b)*c*d*e*f - (a - b)*c^2*f^2)*log(I*cos(d*x + c) - sin(d*x + c) + 1)
 - ((a + b)*d^2*f^2*x^2 + 2*(a + b)*d^2*e*f*x + 2*(a + b)*c*d*e*f - (a + b)
*c^2*f^2)*log(-I*cos(d*x + c) + sin(d*x + c) + 1) + ((a - b)*d^2*f^2*x^2 +
2*(a - b)*d^2*e*f*x + 2*(a - b)*c*d*e*f - (a - b)*c^2*f^2)*log(-I*cos(d*x +
 c) - sin(d*x + c) + 1) - ((a + b)*d^2*e^2 - 2*(a + b)*c*d*e*f + (a + b)*c^
2*f^2)*log(-cos(d*x + c) + I*sin(d*x + c) + I) + ((a - b)*d^2*e^2 - 2*(a -
b)*c*d*e*f + (a - b)*c^2*f^2)*log(-cos(d*x + c) - I*sin(d*x + c) + I))/((a^
2 - b^2)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \sec(dx+c)}{b \sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sec(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [F] time = 1.12, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \sec(dx+c)}{a+b \sin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cos(c + d*x)*(a + b*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^2 \sec \left(c+dx\right)}{a+b\sin \left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sec(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)**2*sec(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.308 $\int \frac{(e+fx)\sec(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=413

$$\frac{iafLi_2\left(-ie^{i(c+dx)}\right)}{d^2\left(a^2-b^2\right)}-\frac{iafLi_2\left(ie^{i(c+dx)}\right)}{d^2\left(a^2-b^2\right)}+\frac{ibfLi_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{d^2\left(a^2-b^2\right)}+\frac{ibfLi_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{d^2\left(a^2-b^2\right)}-\frac{ibfLi_2\left(-e^{2i(c+dx)}\right)}{2d^2\left(a^2-b^2\right)}-\frac{b(e+fx)\log}{d\left(a^2\right.}$$

```
[Out] -2*I*a*(f*x+e)*arctan(exp(I*(d*x+c)))/(a^2-b^2)/d+b*(f*x+e)*ln(1+exp(2*I*(d
*x+c)))/(a^2-b^2)/d-b*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/
(a^2-b^2)/d-b*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2
)/d+I*a*f*polylog(2,-I*exp(I*(d*x+c)))/(a^2-b^2)/d^2-I*a*f*polylog(2,I*exp(
I*(d*x+c)))/(a^2-b^2)/d^2-1/2*I*b*f*polylog(2,-exp(2*I*(d*x+c)))/(a^2-b^2)/
d^2+I*b*f*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)/d^2+I
*b*f*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)/d^2
```

Rubi [A] time = 0.64, antiderivative size = 413, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 8, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4533, 4519, 2190, 2279, 2391, 6742, 4181, 3719}

$$\frac{iaf\text{PolyLog}\left(2,-ie^{i(c+dx)}\right)}{d^2\left(a^2-b^2\right)}-\frac{iaf\text{PolyLog}\left(2,ie^{i(c+dx)}\right)}{d^2\left(a^2-b^2\right)}+\frac{ibf\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{d^2\left(a^2-b^2\right)}+\frac{ibf\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{d^2\left(a^2-b^2\right)}-\cdots$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sec[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-2*I)*a*(e + f*x)*ArcTan[E^(I*(c + d*x))])/((a^2 - b^2)*d) - (b*(e + f*x)
*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)*d) - (b
*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^
2)*d) + (b*(e + f*x)*Log[1 + E^((2*I)*(c + d*x))])/((a^2 - b^2)*d) + (I*a*f
*PolyLog[2, (-I)*E^(I*(c + d*x))])/((a^2 - b^2)*d^2) - (I*a*f*PolyLog[2, I*
E^(I*(c + d*x))])/((a^2 - b^2)*d^2) + (I*b*f*PolyLog[2, (I*b*E^(I*(c + d*x)
))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)*d^2) + (I*b*f*PolyLog[2, (I*b*E^(I*
(c + d*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)*d^2) - ((I/2)*b*f*PolyLog[
2, -E^((2*I)*(c + d*x))])/((a^2 - b^2)*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4533

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[b^2/(a^2 - b^2), Int[((e + f
*x)^m*Sec[c + d*x]^(n - 2))/(a + b*Sin[c + d*x]), x], x] + Dist[1/(a^2 - b^
2), Int[(e + f*x)^m*Sec[c + d*x]^n*(a - b*Sin[c + d*x]), x], x] /; FreeQ[{a
, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 - b^2, 0] && IGtQ[n, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\sec(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\sec(c+dx)(a-b\sin(c+dx))\,dx}{a^2-b^2} - \frac{b^2\int \frac{(e+fx)\cos(c+dx)}{a+b\sin(c+dx)}\,dx}{a^2-b^2}$$

$$= \frac{ib(e+fx)^2}{2\left(a^2-b^2\right)f} + \frac{\int (a(e+fx)\sec(c+dx)-b(e+fx)\tan(c+dx))\,dx}{a^2-b^2} - \frac{b^2\int \frac{e^{i(c+d}}{a-\sqrt{a^2-b}}}{a^2 -}$$

$$= \frac{ib(e+fx)^2}{2\left(a^2-b^2\right)f} - \frac{b(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} + \frac{a\int}{}$$

$$= -\frac{2ia(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)\log\left(1-\frac{}{a}\right.}{\left(a^2-b^2\right)d}$$

$$= -\frac{2ia(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)\log\left(1-\frac{}{a}\right.}{\left(a^2-b^2\right)d}$$

$$= -\frac{2ia(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)\log\left(1-\frac{}{a}\right.}{\left(a^2-b^2\right)d}$$

$$= -\frac{2ia(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)d} - \frac{b(e+fx)\log\left(1-\frac{}{a}\right.}{\left(a^2-b^2\right)d}$$

Mathematica [B] time = 16.83, size = 2743, normalized size = 6.64

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Sec[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((d*e + d*f*x)*(((-I)*b*(d*e + d*f*x)^2)/f + 2*(a - b)*(d*e - c*f)*Log[1 -
Tan[(c + d*x)/2]] - 4*b*(d*e + d*f*x)*Log[(-2*I)/(-I + Tan[(c + d*x)/2])] -
```

```
2*(a + b)*(d*e - c*f)*Log[1 + Tan[(c + d*x)/2]] - (4*I)*b*f*PolyLog[2, -Co
s[c + d*x] + I*Sin[c + d*x]] + (2*I)*(a + b)*f*(Log[1 + I*Tan[(c + d*x)/2]]
*Log[(1/2 - I/2)*(1 + Tan[(c + d*x)/2])] + PolyLog[2, ((1 + I) - (1 - I)*Ta
n[(c + d*x)/2])/2]) - (2*I)*(a + b)*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(1/2
 + I/2)*(1 + Tan[(c + d*x)/2])] + PolyLog[2, (-1/2 - I/2)*(I + Tan[(c + d*x
)/2])]) + (2*I)*(a - b)*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(-1/2 + I/2)*(-1
 + Tan[(c + d*x)/2])] + PolyLog[2, ((1 + I) + (1 - I)*Tan[(c + d*x)/2])/2])
 - (2*I)*(a - b)*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(-1/2 - I/2)*(-1 + Tan[
(c + d*x)/2])] + PolyLog[2, ((1 - I) + (1 + I)*Tan[(c + d*x)/2])/2]))*(a -
b*Sin[c + d*x]))/((a^2 - b^2)*d^2*(-2*a*d*e + 2*a*c*f - (2*I)*a*f*Log[1 - I
*Tan[(c + d*x)/2]] + (2*I)*a*f*Log[1 + I*Tan[(c + d*x)/2]] + 4*b*f*Cos[c +
d*x]*(Log[1 + Cos[c + d*x] - I*Sin[c + d*x]] - Log[(-2*I)/(-I + Tan[(c + d*
x)/2])]) + b*(d*e - c*f + f*(c + d*x))*Sec[(c + d*x)/2]*Sin[(3*(c + d*x))/2
] + b*d*e*Tan[(c + d*x)/2] - b*c*f*Tan[(c + d*x)/2] - b*f*(c + d*x)*Tan[(c
+ d*x)/2] + (2*I)*b*f*Log[1 - I*Tan[(c + d*x)/2]]*Tan[(c + d*x)/2] - (2*I)*
b*f*Log[1 + I*Tan[(c + d*x)/2]]*Tan[(c + d*x)/2])) + ((f*(c + d*x)^2 + (2*I
)*d*e*Log[Sec[(c + d*x)/2]^2] - (2*I)*c*f*Log[Sec[(c + d*x)/2]^2] - (2*I)*d
*e*Log[Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])] + (2*I)*c*f*Log[Sec[(c + d*
x)/2]^2*(a + b*Sin[c + d*x])] - (4*I)*f*(c + d*x)*Log[(-2*I)/(-I + Tan[(c +
 d*x)/2])] - 2*f*Log[1 + I*Tan[(c + d*x)/2]]*Log[(b - Sqrt[-a^2 + b^2] + a*
Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])] + 2*f*Log[1 - I*Tan[(c + d*
x)/2]]*Log[-((b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a
^2 + b^2]))] + 2*f*Log[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] +
a*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])] - 2*f*Log[1 + I*Tan[(c
 + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt
[-a^2 + b^2])] + 4*f*PolyLog[2, -Cos[c + d*x] + I*Sin[c + d*x]] + 2*f*PolyL
og[2, (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))] - 2*f*Po
lyLog[2, (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))] + 2*f
*PolyLog[2, (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])] - 2*f*
PolyLog[2, (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))])*(-(
(b^2*e*Cos[c + d*x])/((a^2 - b^2)*(a + b*Sin[c + d*x]))) + (b^2*c*f*Cos[c +
 d*x])/((a^2 - b^2)*d*(a + b*Sin[c + d*x])) - (b^2*f*(c + d*x)*Cos[c + d*x]
)/((a^2 - b^2)*d*(a + b*Sin[c + d*x]))))/(d*(2*f*(c + d*x) - (4*I)*f*Log[(-
2*I)/(-I + Tan[(c + d*x)/2])] - (4*f*Log[1 + Cos[c + d*x] - I*Sin[c + d*x]]
*(I*Cos[c + d*x] + Sin[c + d*x]))/(-Cos[c + d*x] + I*Sin[c + d*x]) + (I*f*L
og[1 - (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))]*Sec[(c
+ d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) - (I*f*Log[-((b - Sqrt[-a^2 + b^2] +
a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 -
 I*Tan[(c + d*x)/2]) - (I*f*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])
/((-I)*a + b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/
2]) + (I*f*Log[1 - (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2
]))]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) - (I*f*Log[(b - Sqrt[-a^2
 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2
]^2)/(1 + I*Tan[(c + d*x)/2]) - (I*f*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c +
 d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c +
```

```
d*x)/2]) + (2*I)*d*e*Tan[(c + d*x)/2] - (2*I)*c*f*Tan[(c + d*x)/2] + ((2*I
)*f*(c + d*x)*Sec[(c + d*x)/2]^2)/(-I + Tan[(c + d*x)/2]) - (f*Log[1 - (a*(
I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(I
 + Tan[(c + d*x)/2]) + (I*a*f*Log[1 - (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b
 + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(a + I*a*Tan[(c + d*x)/2]) + (a*
f*Log[1 - I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b - Sqrt[-a^2 + b^2] + a
*Tan[(c + d*x)/2]) - (a*f*Log[1 + I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(
b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) + (a*f*Log[1 - I*Tan[(c + d*x)/2
]]*Sec[(c + d*x)/2]^2)/(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) - (a*f*L
og[1 + I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b + Sqrt[-a^2 + b^2] + a*Ta
n[(c + d*x)/2]) - ((2*I)*d*e*Cos[(c + d*x)/2]^2*(b*Cos[c + d*x]*Sec[(c + d*
x)/2]^2 + Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c + d*x)/2]))/(a + b
*Sin[c + d*x]) + ((2*I)*c*f*Cos[(c + d*x)/2]^2*(b*Cos[c + d*x]*Sec[(c + d*x
)/2]^2 + Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c + d*x)/2]))/(a + b*
Sin[c + d*x])))
```

fricas [B] time = 0.67, size = 1189, normalized size = 2.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(I*b*f*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*
x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + I*b*f*dil
og(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*si
n(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - I*b*f*dilog(-1/2*(-2*I*a
*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sq
rt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - I*b*f*dilog(-1/2*(-2*I*a*cos(d*x + c)
+ 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2
)/b^2) + 2*b)/b + 1) + I*(a - b)*f*dilog(I*cos(d*x + c) + sin(d*x + c)) + I
*(a + b)*f*dilog(I*cos(d*x + c) - sin(d*x + c)) - I*(a - b)*f*dilog(-I*cos(
d*x + c) + sin(d*x + c)) - I*(a + b)*f*dilog(-I*cos(d*x + c) - sin(d*x + c)
) + (b*d*e - b*c*f)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(
a^2 - b^2)/b^2) + 2*I*a) + (b*d*e - b*c*f)*log(2*b*cos(d*x + c) - 2*I*b*sin
(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + (b*d*e - b*c*f)*log(-2*b*
cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + (
b*d*e - b*c*f)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2
- b^2)/b^2) - 2*I*a) + (b*d*f*x + b*c*f)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*
sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
 + 2*b)/b) + (b*d*f*x + b*c*f)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)
 + (b*d*f*x + b*c*f)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b
*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (b*d*f
*x + b*c*f)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x
```

```
+ c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - ((a + b)*d*e -
(a + b)*c*f)*log(cos(d*x + c) + I*sin(d*x + c) + I) + ((a - b)*d*e - (a - b
)*c*f)*log(cos(d*x + c) - I*sin(d*x + c) + I) - ((a + b)*d*f*x + (a + b)*c*
f)*log(I*cos(d*x + c) + sin(d*x + c) + 1) + ((a - b)*d*f*x + (a - b)*c*f)*l
og(I*cos(d*x + c) - sin(d*x + c) + 1) - ((a + b)*d*f*x + (a + b)*c*f)*log(-
I*cos(d*x + c) + sin(d*x + c) + 1) + ((a - b)*d*f*x + (a - b)*c*f)*log(-I*c
os(d*x + c) - sin(d*x + c) + 1) - ((a + b)*d*e - (a + b)*c*f)*log(-cos(d*x
+ c) + I*sin(d*x + c) + I) + ((a - b)*d*e - (a - b)*c*f)*log(-cos(d*x + c)
- I*sin(d*x + c) + I))/((a^2 - b^2)*d^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\sec(dx+c)}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sec(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [B] time = 0.36, size = 861, normalized size = 2.08

$$\frac{4e\ln\left(\mathrm{e}^{i(dx+c)}+i\right)}{d(4a-4b)}-\frac{4e\ln\left(\mathrm{e}^{i(dx+c)}-i\right)}{d(4a+4b)}+\frac{4f\ln\left(-i\left(\mathrm{e}^{i(dx+c)}+i\right)\right)x}{d(4a-4b)}+\frac{4f\ln\left(-i\left(\mathrm{e}^{i(dx+c)}+i\right)\right)c}{d^2(4a-4b)}-\frac{4f\ln\left(-i\left(i-\mathrm{e}^{i(dx+c)}\right)\right.}{d(4a+4b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] 4/d*e/(4*a-4*b)*ln(exp(I*(d*x+c))+I)-4/d*e/(4*a+4*b)*ln(exp(I*(d*x+c))-I)+4
/d*f/(4*a-4*b)*ln(-I*(exp(I*(d*x+c))+I))*x+4/d^2*f/(4*a-4*b)*ln(-I*(exp(I*(
d*x+c))+I))*c-4/d*f/(4*a+4*b)*ln(-I*(I-exp(I*(d*x+c))))*x-4/d^2*f/(4*a+4*b)
*ln(-I*(I-exp(I*(d*x+c))))*c+I/d^2*f*b/(a+b)/(a-b)*dilog((I*b*exp(I*(d*x+c)
)+(a^2-b^2)^(1/2)-a)/(-a+(a^2-b^2)^(1/2)))-1/d*f*b/(a+b)/(a-b)*ln(-(I*b*exp
(I*(d*x+c))-(a^2-b^2)^(1/2)-a)/(a+(a^2-b^2)^(1/2)))*x-1/d^2*f*b/(a+b)/(a-b)
*ln(-(I*b*exp(I*(d*x+c))-(a^2-b^2)^(1/2)-a)/(a+(a^2-b^2)^(1/2)))*c-4*I/d^2*
f/(4*a+4*b)*ln(-I*(I-exp(I*(d*x+c))))*ln(-I*exp(I*(d*x+c)))-1/d*f*b/(a+b)/(
a-b)*ln((I*b*exp(I*(d*x+c))+(a^2-b^2)^(1/2)-a)/(-a+(a^2-b^2)^(1/2)))*x-1/d^
2*f*b/(a+b)/(a-b)*ln((I*b*exp(I*(d*x+c))+(a^2-b^2)^(1/2)-a)/(-a+(a^2-b^2)^(
1/2)))*c-4*I/d^2*f/(4*a+4*b)*dilog(-I*exp(I*(d*x+c)))-4*I/d^2*f/(4*a-4*b)*d
ilog(-I*(exp(I*(d*x+c))+I))+I/d^2*f*b/(a+b)/(a-b)*dilog(-(I*b*exp(I*(d*x+c)
)-(a^2-b^2)^(1/2)-a)/(a+(a^2-b^2)^(1/2)))-1/d*e*b/(a+b)/(a-b)*ln(I*b*exp(2*
I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)+1/d^2*f*c*b/(a+b)/(a-b)*ln(I*b*exp(2*I*(
```

```
d*x+c))-2*a*exp(I*(d*x+c))-I*b)-4/d^2*f*c/(4*a-4*b)*ln(exp(I*(d*x+c))+I)+4/
d^2*f*c/(4*a+4*b)*ln(exp(I*(d*x+c))-I)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cos(c + d*x)*(a + b*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e + fx)\sec (c + dx)}{a + b\sin (c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*sec(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.309 $\int \frac{\sec(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=75

$$-\frac{b\log(a+b\sin(c+dx))}{d\left(a^2-b^2\right)}-\frac{\log(1-\sin(c+dx))}{2d(a+b)}+\frac{\log(\sin(c+dx)+1)}{2d(a-b)}$$

```
[Out] -1/2*ln(1-sin(d*x+c))/(a+b)/d+1/2*ln(1+sin(d*x+c))/(a-b)/d-b*ln(a+b*sin(d*x
+c))/(a^2-b^2)/d
```

Rubi [A] time = 0.08, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {2668, 706, 31, 633}

$$-\frac{b\log(a+b\sin(c+dx))}{d\left(a^2-b^2\right)}-\frac{\log(1-\sin(c+dx))}{2d(a+b)}+\frac{\log(\sin(c+dx)+1)}{2d(a-b)}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[c + d*x]/(a + b*Sin[c + d*x]),x]
```

```
[Out] -Log[1 - Sin[c + d*x]]/(2*(a + b)*d) + Log[1 + Sin[c + d*x]]/(2*(a - b)*d)
- (b*Log[a + b*Sin[c + d*x]])/((a^2 - b^2)*d)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sec(c+dx)}{a+b\sin(c+dx)}\,dx &= \frac{b\,\mathrm{Subst}\left(\int \frac{1}{(a+x)\left(b^2-x^2\right)}\,dx, x, b\sin(c+dx)\right)}{d}\\
&= -\frac{b\,\mathrm{Subst}\left(\int \frac{1}{a+x}\,dx, x, b\sin(c+dx)\right)}{\left(a^2-b^2\right)d} - \frac{b\,\mathrm{Subst}\left(\int \frac{-a+x}{b^2-x^2}\,dx, x, b\sin(c+dx)\right)}{\left(a^2-b^2\right)d}\\
&= -\frac{b\log(a+b\sin(c+dx))}{\left(a^2-b^2\right)d} - \frac{\mathrm{Subst}\left(\int \frac{1}{-b-x}\,dx, x, b\sin(c+dx)\right)}{2(a-b)d} + \frac{\mathrm{Subst}\left(\int \frac{1}{b-x}\,dx, x,\right.}{2(a+b)}\\
&= -\frac{\log(1-\sin(c+dx))}{2(a+b)d} + \frac{\log(1+\sin(c+dx))}{2(a-b)d} - \frac{b\log(a+b\sin(c+dx))}{\left(a^2-b^2\right)d}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 64, normalized size = 0.85

$$
\frac{(b-a)\log(1-\sin(c+dx))+(a+b)\log(\sin(c+dx)+1)-2b\log(a+b\sin(c+dx))}{2d(a-b)(a+b)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[c + d*x]/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-a + b)*Log[1 - Sin[c + d*x]] + (a + b)*Log[1 + Sin[c + d*x]] - 2*b*Log[a
 + b*Sin[c + d*x]])/(2*(a - b)*(a + b)*d)
```

fricas [A] time = 0.46, size = 62, normalized size = 0.83

$$
-\frac{2\,b\log\left(b\sin\left(dx+c\right)+a\right)-(a+b)\log\left(\sin\left(dx+c\right)+1\right)+(a-b)\log\left(-\sin\left(dx+c\right)+1\right)}{2\left(a^2-b^2\right)d}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*log(b*sin(d*x + c) + a) - (a + b)*log(sin(d*x + c) + 1) + (a - b)
*log(-sin(d*x + c) + 1))/((a^2 - b^2)*d)
```

giac [A] time = 2.09, size = 71, normalized size = 0.95

$$-\frac{\frac{2\,b^{2}\log\left(|b\sin\left(dx+c\right)+a|\right)}{a^{2}b-b^{3}}-\frac{\log\left(|\sin\left(dx+c\right)+1|\right)}{a-b}+\frac{\log\left(|\sin\left(dx+c\right)-1|\right)}{a+b}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(2*b^2*log(abs(b*sin(d*x + c) + a))/(a^2*b - b^3) - log(abs(sin(d*x +
c) + 1))/(a - b) + log(abs(sin(d*x + c) - 1))/(a + b))/d
```

maple [A] time = 0.00, size = 76, normalized size = 1.01

$$-\frac{\ln\left(\sin\left(dx+c\right)-1\right)}{d\left(2a+2b\right)}-\frac{b\ln\left(a+b\sin\left(dx+c\right)\right)}{d\left(a+b\right)\left(a-b\right)}+\frac{\ln\left(1+\sin\left(dx+c\right)\right)}{d\left(2a-2b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] -1/d/(2*a+2*b)*ln(sin(d*x+c)-1)-1/d*b/(a+b)/(a-b)*ln(a+b*sin(d*x+c))+1/d/(2
*a-2*b)*ln(1+sin(d*x+c))
```

maxima [A] time = 1.32, size = 64, normalized size = 0.85

$$-\frac{\frac{2\,b\log\left(b\sin\left(dx+c\right)+a\right)}{a^{2}-b^{2}}-\frac{\log\left(\sin\left(dx+c\right)+1\right)}{a-b}+\frac{\log\left(\sin\left(dx+c\right)-1\right)}{a+b}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*(2*b*log(b*sin(d*x + c) + a)/(a^2 - b^2) - log(sin(d*x + c) + 1)/(a -
b) + log(sin(d*x + c) - 1)/(a + b))/d
```

mupad [B] time = 0.20, size = 69, normalized size = 0.92

$$\frac{\ln\left(\sin\left(c+d\,x\right)+1\right)}{2\,d\,\left(a-b\right)}-\frac{\ln\left(\sin\left(c+d\,x\right)-1\right)}{2\,d\,\left(a+b\right)}-\frac{b\,\ln\left(a+b\,\sin\left(c+d\,x\right)\right)}{d\,\left(a^2-b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(cos(c + d*x)*(a + b*sin(c + d*x))),x)
```

```
[Out] log(sin(c + d*x) + 1)/(2*d*(a - b)) - log(sin(c + d*x) - 1)/(2*d*(a + b)) -
 (b*log(a + b*sin(c + d*x)))/(d*(a^2 - b^2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sec(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral(sec(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.310 $\int \frac{(e+fx)^3 \sec^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=923

$$-\frac{6b\text{Li}_3\left(-ie^{i(c+dx)}\right)f^3}{(a^2-b^2)\,d^4}+\frac{6b\text{Li}_3\left(ie^{i(c+dx)}\right)f^3}{(a^2-b^2)\,d^4}+\frac{3a\text{Li}_3\left(-e^{2i(c+dx)}\right)f^3}{2\,(a^2-b^2)\,d^4}-\frac{6b^2\text{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)f^3}{(a^2-b^2)^{3/2}\,d^4}+\frac{6b^2\text{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)f^3}{(a^2-b^2)^{3/2}\,d^4}+\cdots$$

```
[Out] 6*I*b*f^2*(f*x+e)*polylog(2,-I*exp(I*(d*x+c)))/(a^2-b^2)/d^3+I*b^2*(f*x+e)^
3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/d+3*a*f*(f*x
+e)^2*ln(1+exp(2*I*(d*x+c)))/(a^2-b^2)/d^2-I*a*(f*x+e)^3/(a^2-b^2)/d-I*b^2*
(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/d-3*
I*a*f^2*(f*x+e)*polylog(2,-exp(2*I*(d*x+c)))/(a^2-b^2)/d^3-6*I*b^2*f^2*(f*x
+e)*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/d^3-6
*I*b*f*(f*x+e)^2*arctan(exp(I*(d*x+c)))/(a^2-b^2)/d^2+3*b^2*f*(f*x+e)^2*pol
ylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/d^2-3*b^2*f*
(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)
/d^2-6*b*f^3*polylog(3,-I*exp(I*(d*x+c)))/(a^2-b^2)/d^4+6*b*f^3*polylog(3,I
*exp(I*(d*x+c)))/(a^2-b^2)/d^4+3/2*a*f^3*polylog(3,-exp(2*I*(d*x+c)))/(a^2-
b^2)/d^4-6*I*b*f^2*(f*x+e)*polylog(2,I*exp(I*(d*x+c)))/(a^2-b^2)/d^3+6*I*b^
2*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)^(
3/2)/d^3-6*b^2*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b
^2)^(3/2)/d^4+6*b^2*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(
a^2-b^2)^(3/2)/d^4-b*(f*x+e)^3*sec(d*x+c)/(a^2-b^2)/d+a*(f*x+e)^3*tan(d*x+c
)/(a^2-b^2)/d
```

Rubi [A] time = 1.94, antiderivative size = 923, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 13, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.464, Rules used = {4533, 3323, 2264, 2190, 2531, 6609, 2282, 6589, 6742, 4184, 3719, 4409, 4181}

$$-\frac{6b\text{PolyLog}\left(3,-ie^{i(c+dx)}\right)f^3}{(a^2-b^2)\,d^4}+\frac{6b\text{PolyLog}\left(3,ie^{i(c+dx)}\right)f^3}{(a^2-b^2)\,d^4}+\frac{3a\text{PolyLog}\left(3,-e^{2i(c+dx)}\right)f^3}{2\,(a^2-b^2)\,d^4}-\frac{6b^2\text{PolyLog}\left(4,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{(a^2-b^2)^{3/2}\,d^4}\cdots$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Sec[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I)*a*(e + f*x)^3)/((a^2 - b^2)*d) - ((6*I)*b*f*(e + f*x)^2*ArcTan[E^(I*(
c + d*x))])/((a^2 - b^2)*d^2) + (I*b^2*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d
*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d) - (I*b^2*(e + f*x)^3*Lo
g[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d) +
```

```
(3*a*f*(e + f*x)^2*Log[1 + E^((2*I)*(c + d*x))])/((a^2 - b^2)*d^2) + ((6*I
)*b*f^2*(e + f*x)*PolyLog[2, (-I)*E^(I*(c + d*x))])/((a^2 - b^2)*d^3) - ((6
*I)*b*f^2*(e + f*x)*PolyLog[2, I*E^(I*(c + d*x))])/((a^2 - b^2)*d^3) + (3*b
^2*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(
(a^2 - b^2)^(3/2)*d^2) - (3*b^2*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x
)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d^2) - ((3*I)*a*f^2*(e + f*x
)*PolyLog[2, -E^((2*I)*(c + d*x))])/((a^2 - b^2)*d^3) - (6*b*f^3*PolyLog[3,
 (-I)*E^(I*(c + d*x))])/((a^2 - b^2)*d^4) + (6*b*f^3*PolyLog[3, I*E^(I*(c +
 d*x))])/((a^2 - b^2)*d^4) + ((6*I)*b^2*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*
(c + d*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d^3) - ((6*I)*b^2*f^
2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/((a^2
- b^2)^(3/2)*d^3) + (3*a*f^3*PolyLog[3, -E^((2*I)*(c + d*x))])/(2*(a^2 - b^
2)*d^4) - (6*b^2*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])
])/((a^2 - b^2)^(3/2)*d^4) + (6*b^2*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a
 + Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d^4) - (b*(e + f*x)^3*Sec[c + d*x]
)/((a^2 - b^2)*d) + (a*(e + f*x)^3*Tan[c + d*x])/((a^2 - b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
```

```
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4533

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[b^2/(a^2 - b^2), Int[((e + f
*x)^m*Sec[c + d*x]^(n - 2))/(a + b*Sin[c + d*x]), x], x] + Dist[1/(a^2 - b^
2), Int[(e + f*x)^m*Sec[c + d*x]^n*(a - b*Sin[c + d*x]), x], x] /; FreeQ[{a
```

```
, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 - b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^3\sec^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\sec^2(c+dx)(a-b\sin(c+dx))\,dx}{a^2-b^2} - \frac{b^2\int \frac{(e+fx)^3}{a+b\sin(c+dx)}\,dx}{a^2-b^2}$$

$$= \frac{\int \left(a(e+fx)^3\sec^2(c+dx) - b(e+fx)^3\sec(c+dx)\tan(c+dx)\right)dx}{a^2-b^2} - \frac{\left(2b^2\right)\int \frac{}{ib+2}}{}$$

$$= \frac{\left(2ib^3\right)\int \frac{e^{i(c+dx)}(e+fx)^3}{2a-2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\left(a^2-b^2\right)^{3/2}} - \frac{\left(2ib^3\right)\int \frac{e^{i(c+dx)}(e+fx)^3}{2a+2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\left(a^2-b^2\right)^{3/2}} + \frac{a\int (e+fx)^3 s}{a^2}$$

$$= \frac{ib^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{ib^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{b(e+fx)^3\sec}{\left(a^2-b^2\right.}$$

$$= -\frac{ia(e+fx)^3}{\left(a^2-b^2\right)d} - \frac{6ibf(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} -$$

$$= -\frac{ia(e+fx)^3}{\left(a^2-b^2\right)d} - \frac{6ibf(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} -$$

$$= -\frac{ia(e+fx)^3}{\left(a^2-b^2\right)d} - \frac{6ibf(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} -$$

$$= -\frac{ia(e+fx)^3}{\left(a^2-b^2\right)d} - \frac{6ibf(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} -$$

$$= -\frac{ia(e+fx)^3}{\left(a^2-b^2\right)d} - \frac{6ibf(e+fx)^2\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)^3\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} -$$

Mathematica [A] time = 9.34, size = 1438, normalized size = 1.56

$$\frac{b\sec(c)(e+fx)^3}{\left(b^2-a^2\right)d} + \frac{f\left(\frac{2ia(e+fx)^3}{f} + \frac{3(a-b)\left(1+e^{2ic}\right)\log\left(1-ie^{-i(c+dx)}\right)(e+fx)^2}{d} + \frac{3(a+b)\left(1+e^{2ic}\right)\log\left(1+ie^{-i(c+dx)}\right)(e+fx)^2}{d} + \frac{6(a+b)\left(1+e^{2ic}\right)f}{}\right.}{\left(a^2-b^2\right)d\left(1+\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Sec[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (f*(((2*I)*a*(e + f*x)^3)/f + (3*(a - b)*(1 + E^((2*I)*c))*(e + f*x)^2*Log[
1 - I/E^(I*(c + d*x))])/d + (3*(a + b)*(1 + E^((2*I)*c))*(e + f*x)^2*Log[1
+ I/E^(I*(c + d*x))])/d + (6*(a + b)*(1 + E^((2*I)*c))*f*(I*d*(e + f*x)*Pol
yLog[2, (-I)/E^(I*(c + d*x))] + f*PolyLog[3, (-I)/E^(I*(c + d*x))]))/d^3 +
(6*(a - b)*(1 + E^((2*I)*c))*f*(I*d*(e + f*x)*PolyLog[2, I/E^(I*(c + d*x))]
 + f*PolyLog[3, I/E^(I*(c + d*x))]))/d^3))/((a^2 - b^2)*d*(1 + E^((2*I)*c))
) + (b^2*(2*Sqrt[-a^2 + b^2]*d^3*e^3*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[
a^2 - b^2]] + 3*Sqrt[a^2 - b^2]*d^3*e^2*f*x*Log[1 - (b*E^(I*(c + d*x)))/((-
I)*a + Sqrt[-a^2 + b^2])] + 3*Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*Log[1 - (b*E^(I
*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log
[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d
^3*e^2*f*x*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - 3*Sqrt[a
^2 - b^2]*d^3*e*f^2*x^2*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]
)] - Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a
^2 + b^2])] - (3*I)*Sqrt[a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(I*(c
 + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + (3*I)*Sqrt[a^2 - b^2]*d^2*f*(e + f
*x)^2*PolyLog[2, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] + 6*Sqrt[
a^2 - b^2]*d*e*f^2*PolyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2
])] + 6*Sqrt[a^2 - b^2]*d*f^3*x*PolyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sq
rt[-a^2 + b^2])] - 6*Sqrt[a^2 - b^2]*d*e*f^2*PolyLog[3, -((b*E^(I*(c + d*x)
))/(I*a + Sqrt[-a^2 + b^2]))] - 6*Sqrt[a^2 - b^2]*d*f^3*x*PolyLog[3, -((b*E
^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] + (6*I)*Sqrt[a^2 - b^2]*f^3*Poly
Log[4, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - (6*I)*Sqrt[a^2 -
b^2]*f^3*PolyLog[4, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))]))/(Sqr
t[-(a^2 - b^2)^2]*(-a^2 + b^2)*d^4) + (b*(e + f*x)^3*Sec[c])/((-a^2 + b^2)*
d) + (e^3*Sin[(d*x)/2] + 3*e^2*f*x*Sin[(d*x)/2] + 3*e*f^2*x^2*Sin[(d*x)/2]
+ f^3*x^3*Sin[(d*x)/2])/((a + b)*d*(Cos[c/2] - Sin[c/2])*(Cos[c/2 + (d*x)/2
] - Sin[c/2 + (d*x)/2])) + (e^3*Sin[(d*x)/2] + 3*e^2*f*x*Sin[(d*x)/2] + 3*e
*f^2*x^2*Sin[(d*x)/2] + f^3*x^3*Sin[(d*x)/2])/((a - b)*d*(Cos[c/2] + Sin[c/
2])*(Cos[c/2 + (d*x)/2] + Sin[c/2 + (d*x)/2]))
```

fricas [C] time = 1.05, size = 4140, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -1/4*(4*(a^2*b - b^3)*d^3*f^3*x^3 + 12*(a^2*b - b^3)*d^3*e*f^2*x^2 - 12*I*b
^3*f^3*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*polylog(4, 1/2*(2*I*a*cos(d*x +
c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
b^2)/b^2))/b) + 12*I*b^3*f^3*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*polylog(4,
 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d
```

```
*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*I*b^3*f^3*sqrt(-(a^2 - b^2)/b^2)*c
os(d*x + c)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*c
os(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*I*b^3*f^3*s
qrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*
a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2))/b) + 12*(a^2*b - b^3)*d^3*e^2*f*x + 4*(a^2*b - b^3)*d^3*e^3 - 12*(a^3 -
 a^2*b - a*b^2 + b^3)*f^3*cos(d*x + c)*polylog(3, I*cos(d*x + c) + sin(d*x
+ c)) - 12*(a^3 + a^2*b - a*b^2 - b^3)*f^3*cos(d*x + c)*polylog(3, I*cos(d*
x + c) - sin(d*x + c)) - 12*(a^3 - a^2*b - a*b^2 + b^3)*f^3*cos(d*x + c)*po
lylog(3, -I*cos(d*x + c) + sin(d*x + c)) - 12*(a^3 + a^2*b - a*b^2 - b^3)*f
^3*cos(d*x + c)*polylog(3, -I*cos(d*x + c) - sin(d*x + c)) - 2*(-3*I*b^3*d^
2*f^3*x^2 - 6*I*b^3*d^2*e*f^2*x - 3*I*b^3*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)
*cos(d*x + c)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(
d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(3*I*
b^3*d^2*f^3*x^2 + 6*I*b^3*d^2*e*f^2*x + 3*I*b^3*d^2*e^2*f)*sqrt(-(a^2 - b^2
)/b^2)*cos(d*x + c)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(
b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2
*(3*I*b^3*d^2*f^3*x^2 + 6*I*b^3*d^2*e*f^2*x + 3*I*b^3*d^2*e^2*f)*sqrt(-(a^2
 - b^2)/b^2)*cos(d*x + c)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c
) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b +
 1) - 2*(-3*I*b^3*d^2*f^3*x^2 - 6*I*b^3*d^2*e*f^2*x - 3*I*b^3*d^2*e^2*f)*sq
rt(-(a^2 - b^2)/b^2)*cos(d*x + c)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin
(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) +
2*b)/b + 1) + 2*(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*
c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(2*b*cos(d*x + c) + 2*I*b*s
in(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*(b^3*d^3*e^3 - 3*b^3*
c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*cos(d
*x + c)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b
^2) - 2*I*a) - 2*(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3
*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(-2*b*cos(d*x + c) + 2*I*b
*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(b^3*d^3*e^3 - 3*b^
3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*cos
(d*x + c)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2
)/b^2) - 2*I*a) + 2*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*
f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*sqrt(-(a^2 - b^2
)/b^2)*cos(d*x + c)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*c
os(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b^3*d
^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f -
3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(1/
2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f
^2*x^2 + 3*b^3*d^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^
3*f^3)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(1/2*(-2*I*a*cos(d*x + c) + 2
*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2) + 2*b)/b) - 2*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*
```

```
x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*sqrt(-(a^2 - b^2)/
b^2)*cos(d*x + c)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 12*(b^3*d
*f^3*x + b^3*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*polylog(3, 1/2*(2
*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(b^3*d*f^3*x + b^3*d*e*f^2)*sqrt(-(a^2 -
b^2)/b^2)*cos(d*x + c)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c
) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*(
b^3*d*f^3*x + b^3*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*polylog(3, 1
/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*
x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(b^3*d*f^3*x + b^3*d*e*f^2)*sqrt(-(
a^2 - b^2)/b^2)*cos(d*x + c)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(
d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)
 - (12*I*(a^3 - a^2*b - a*b^2 + b^3)*d*f^3*x + 12*I*(a^3 - a^2*b - a*b^2 +
b^3)*d*e*f^2)*cos(d*x + c)*dilog(I*cos(d*x + c) + sin(d*x + c)) - (-12*I*(a
^3 + a^2*b - a*b^2 - b^3)*d*f^3*x - 12*I*(a^3 + a^2*b - a*b^2 - b^3)*d*e*f^
2)*cos(d*x + c)*dilog(I*cos(d*x + c) - sin(d*x + c)) - (-12*I*(a^3 - a^2*b
- a*b^2 + b^3)*d*f^3*x - 12*I*(a^3 - a^2*b - a*b^2 + b^3)*d*e*f^2)*cos(d*x
+ c)*dilog(-I*cos(d*x + c) + sin(d*x + c)) - (12*I*(a^3 + a^2*b - a*b^2 - b
^3)*d*f^3*x + 12*I*(a^3 + a^2*b - a*b^2 - b^3)*d*e*f^2)*cos(d*x + c)*dilog(
-I*cos(d*x + c) - sin(d*x + c)) - 6*((a^3 + a^2*b - a*b^2 - b^3)*d^2*e^2*f
- 2*(a^3 + a^2*b - a*b^2 - b^3)*c*d*e*f^2 + (a^3 + a^2*b - a*b^2 - b^3)*c^2
*f^3)*cos(d*x + c)*log(cos(d*x + c) + I*sin(d*x + c) + I) - 6*((a^3 - a^2*b
 - a*b^2 + b^3)*d^2*e^2*f - 2*(a^3 - a^2*b - a*b^2 + b^3)*c*d*e*f^2 + (a^3
- a^2*b - a*b^2 + b^3)*c^2*f^3)*cos(d*x + c)*log(cos(d*x + c) - I*sin(d*x +
 c) + I) - 6*((a^3 + a^2*b - a*b^2 - b^3)*d^2*f^3*x^2 + 2*(a^3 + a^2*b - a*
b^2 - b^3)*d^2*e*f^2*x + 2*(a^3 + a^2*b - a*b^2 - b^3)*c*d*e*f^2 - (a^3 + a
^2*b - a*b^2 - b^3)*c^2*f^3)*cos(d*x + c)*log(I*cos(d*x + c) + sin(d*x + c)
 + 1) - 6*((a^3 - a^2*b - a*b^2 + b^3)*d^2*f^3*x^2 + 2*(a^3 - a^2*b - a*b^2
 + b^3)*d^2*e*f^2*x + 2*(a^3 - a^2*b - a*b^2 + b^3)*c*d*e*f^2 - (a^3 - a^2*
b - a*b^2 + b^3)*c^2*f^3)*cos(d*x + c)*log(I*cos(d*x + c) - sin(d*x + c) +
1) - 6*((a^3 + a^2*b - a*b^2 - b^3)*d^2*f^3*x^2 + 2*(a^3 + a^2*b - a*b^2 -
b^3)*d^2*e*f^2*x + 2*(a^3 + a^2*b - a*b^2 - b^3)*c*d*e*f^2 - (a^3 + a^2*b -
 a*b^2 - b^3)*c^2*f^3)*cos(d*x + c)*log(-I*cos(d*x + c) + sin(d*x + c) + 1)
 - 6*((a^3 - a^2*b - a*b^2 + b^3)*d^2*f^3*x^2 + 2*(a^3 - a^2*b - a*b^2 + b^
3)*d^2*e*f^2*x + 2*(a^3 - a^2*b - a*b^2 + b^3)*c*d*e*f^2 - (a^3 - a^2*b - a
*b^2 + b^3)*c^2*f^3)*cos(d*x + c)*log(-I*cos(d*x + c) - sin(d*x + c) + 1) -
 6*((a^3 + a^2*b - a*b^2 - b^3)*d^2*e^2*f - 2*(a^3 + a^2*b - a*b^2 - b^3)*c
*d*e*f^2 + (a^3 + a^2*b - a*b^2 - b^3)*c^2*f^3)*cos(d*x + c)*log(-cos(d*x +
 c) + I*sin(d*x + c) + I) - 6*((a^3 - a^2*b - a*b^2 + b^3)*d^2*e^2*f - 2*(a
^3 - a^2*b - a*b^2 + b^3)*c*d*e*f^2 + (a^3 - a^2*b - a*b^2 + b^3)*c^2*f^3)*
cos(d*x + c)*log(-cos(d*x + c) - I*sin(d*x + c) + I) - 4*((a^3 - a*b^2)*d^3
*f^3*x^3 + 3*(a^3 - a*b^2)*d^3*e*f^2*x^2 + 3*(a^3 - a*b^2)*d^3*e^2*f*x + (a
^3 - a*b^2)*d^3*e^3)*sin(d*x + c))/((a^4 - 2*a^2*b^2 + b^4)*d^4*cos(d*x + c
))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \sec(dx+c)^2}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^3*sec(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [F] time = 6.70, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^3 \left(\sec^2(dx+c)\right)}{a+b\sin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*sec(d*x+c)^2/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^3*sec(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^3/(cos(c + d*x)^2*(a + b*sin(c + d*x))),x)
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{3}\sec^{2}\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*sec(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*sec(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.311 $\int \frac{(e+fx)^2 \sec^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=659

$$\frac{2ib^2f^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{d^3\left(a^2-b^2\right)^{3/2}}-\frac{2ib^2f^2\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{d^3\left(a^2-b^2\right)^{3/2}}+\frac{2ibf^2\text{Li}_2\left(-ie^{i(c+dx)}\right)}{d^3\left(a^2-b^2\right)}-\frac{2ibf^2\text{Li}_2\left(ie^{i(c+dx)}\right)}{d^3\left(a^2-b^2\right)}-\frac{iaf^2\text{Li}_2\left(-e^{2i(c+dx)}\right)}{d^3\left(a^2-b^2\right)}+\frac{2b}{}$$

```
[Out] -I*a*(f*x+e)^2/(a^2-b^2)/d-4*I*b*f*(f*x+e)*arctan(exp(I*(d*x+c)))/(a^2-b^2)
/d^2+2*a*f*(f*x+e)*ln(1+exp(2*I*(d*x+c)))/(a^2-b^2)/d^2+I*b^2*(f*x+e)^2*ln(
1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/d-I*b^2*(f*x+e)^2
*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/d+2*I*b*f^2*p
olylog(2,-I*exp(I*(d*x+c)))/(a^2-b^2)/d^3-2*I*b*f^2*polylog(2,I*exp(I*(d*x+
c)))/(a^2-b^2)/d^3-I*a*f^2*polylog(2,-exp(2*I*(d*x+c)))/(a^2-b^2)/d^3+2*b^2
*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2
)/d^2-2*b^2*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^
2-b^2)^(3/2)/d^2+2*I*b^2*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2
)))/(a^2-b^2)^(3/2)/d^3-2*I*b^2*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^
2)^(1/2)))/(a^2-b^2)^(3/2)/d^3-b*(f*x+e)^2*sec(d*x+c)/(a^2-b^2)/d+a*(f*x+e)
^2*tan(d*x+c)/(a^2-b^2)/d
```

Rubi [A] time = 1.43, antiderivative size = 659, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 14, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4533, 3323, 2264, 2190, 2531, 2282, 6589, 6742, 4184, 3719, 2279, 2391, 4409, 4181}

$$\frac{2b^2f(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{d^2\left(a^2-b^2\right)^{3/2}}-\frac{2b^2f(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{d^2\left(a^2-b^2\right)^{3/2}}+\frac{2ib^2f^2\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{d^3\left(a^2-b^2\right)^{3/2}}-\frac{2ib^2f^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Sec[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I)*a*(e + f*x)^2)/((a^2 - b^2)*d) - ((4*I)*b*f*(e + f*x)*ArcTan[E^(I*(c
+ d*x))])/((a^2 - b^2)*d^2) + (I*b^2*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x
)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d) - (I*b^2*(e + f*x)^2*Log[
1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d) + (
2*a*f*(e + f*x)*Log[1 + E^((2*I)*(c + d*x))])/((a^2 - b^2)*d^2) + ((2*I)*b*
f^2*PolyLog[2, (-I)*E^(I*(c + d*x))])/((a^2 - b^2)*d^3) - ((2*I)*b*f^2*Poly
Log[2, I*E^(I*(c + d*x))])/((a^2 - b^2)*d^3) + (2*b^2*f*(e + f*x)*PolyLog[2
, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d^2) - (
2*b^2*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/
```

```
((a^2 - b^2)^(3/2)*d^2) - (I*a*f^2*PolyLog[2, -E^((2*I)*(c + d*x))])/((a^2
- b^2)*d^3) + ((2*I)*b^2*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2
 - b^2])])/((a^2 - b^2)^(3/2)*d^3) - ((2*I)*b^2*f^2*PolyLog[3, (I*b*E^(I*(c
 + d*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d^3) - (b*(e + f*x)^2*
Sec[c + d*x])/((a^2 - b^2)*d) + (a*(e + f*x)^2*Tan[c + d*x])/((a^2 - b^2)*d
)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3719

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + (f_.)*(x_)], x_Symbol] :> Simp[(
I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^m*E^(2*I*(e
 + f*x)))/(1 + E^(2*I*(e + f*x))), x], x] /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4181

```
Int[csc[(e_.) + Pi*(k_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol
] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(I*k*Pi)*E^(I*(e + f*x))])/f, x] + (-Di
st[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 - E^(I*k*Pi)*E^(I*(e + f*x))], x],
x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Log[1 + E^(I*k*Pi)*E^(I*(e + f*x))
], x], x]) /; FreeQ[{c, d, e, f}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4533

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[b^2/(a^2 - b^2), Int[((e + f
*x)^m*Sec[c + d*x]^(n - 2))/(a + b*Sin[c + d*x]), x], x] + Dist[1/(a^2 - b^
2), Int[(e + f*x)^m*Sec[c + d*x]^n*(a - b*Sin[c + d*x]), x], x] /; FreeQ[{a
```

```
, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 - b^2, 0] && IGtQ[n, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)^2 \sec^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2 \sec^2(c+dx)(a-b\sin(c+dx))\,dx}{a^2-b^2} - \frac{b^2\int \frac{(e+fx)^2}{a+b\sin(c+dx)}\,dx}{a^2-b^2}$$

$$= \frac{\int \left(a(e+fx)^2\sec^2(c+dx) - b(e+fx)^2\sec(c+dx)\tan(c+dx)\right)dx}{a^2-b^2} - \frac{\left(2b^2\right)\int \frac{}{ib+2}}{}$$

$$= \frac{\left(2ib^3\right)\int \frac{e^{i(c+dx)}(e+fx)^2}{2a-2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\left(a^2-b^2\right)^{3/2}} - \frac{\left(2ib^3\right)\int \frac{e^{i(c+dx)}(e+fx)^2}{2a+2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\left(a^2-b^2\right)^{3/2}} + \frac{a\int (e+fx)^2 s}{a^2}$$

$$= \frac{ib^2(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{ib^2(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{b(e+fx)^2\sec}{\left(a^2-b^2\right.}$$

$$= -\frac{ia(e+fx)^2}{\left(a^2-b^2\right)d} - \frac{4ibf(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{i}{}$$

$$= -\frac{ia(e+fx)^2}{\left(a^2-b^2\right)d} - \frac{4ibf(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{i}{}$$

$$= -\frac{ia(e+fx)^2}{\left(a^2-b^2\right)d} - \frac{4ibf(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{i}{}$$

$$= -\frac{ia(e+fx)^2}{\left(a^2-b^2\right)d} - \frac{4ibf(e+fx)\tan^{-1}\left(e^{i(c+dx)}\right)}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{i}{}$$

Mathematica [A] time = 7.93, size = 1122, normalized size = 1.70

$$\frac{i\left(-2\sqrt{a^2-b^2}\,df(e+fx)\text{Li}_2\left(\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right) + 2\sqrt{a^2-b^2}\,df(e+fx)\text{Li}_2\left(-\frac{be^{i(c+dx)}}{ia+\sqrt{b^2-a^2}}\right) - i\left(\left(2\sqrt{b^2-a^2}\,\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right.\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Sec[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (I*b^2*(-2*Sqrt[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, (b*E^(I*(c + d*x)))/((-
I)*a + Sqrt[-a^2 + b^2])] + 2*Sqrt[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, -((b
*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] - I*(d^2*(2*Sqrt[-a^2 + b^2]*e
^2*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + Sqrt[a^2 - b^2]*f*x*
(2*e + f*x)*(Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - Log
[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])])) + 2*Sqrt[a^2 - b^2]*f^
2*PolyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 2*Sqrt[a^2
- b^2]*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))])))/(
Sqrt[-(a^2 - b^2)^2]*(-a^2 + b^2)*d^3) + (b*(e + f*x)^2*Sec[c])/((-a^2 + b^
2)*d) + (2*a*e*f*Sec[c]*(Cos[c]*Log[Cos[c]*Cos[d*x] - Sin[c]*Sin[d*x]] + d*
x*Sin[c]))/((a^2 - b^2)*d^2*(Cos[c]^2 + Sin[c]^2)) + ((4*I)*b*e*f*ArcTan[((
-I)*Sin[c] - I*Cos[c]*Tan[(d*x)/2])/Sqrt[Cos[c]^2 + Sin[c]^2]])/((a^2 - b^2
)*d^2*Sqrt[Cos[c]^2 + Sin[c]^2]) + (a*f^2*Csc[c]*((d^2*x^2)/E^(I*ArcTan[Cot
[c]]) - (Cot[c]*(I*d*x*(-Pi - 2*ArcTan[Cot[c]]) - Pi*Log[1 + E^((-2*I)*d*x)
] - 2*(d*x - ArcTan[Cot[c]])*Log[1 - E^((2*I)*(d*x - ArcTan[Cot[c]]))] + Pi
*Log[Cos[d*x]] - 2*ArcTan[Cot[c]]*Log[Sin[d*x - ArcTan[Cot[c]]]] + I*PolyLo
g[2, E^((2*I)*(d*x - ArcTan[Cot[c]]))]))/Sqrt[1 + Cot[c]^2])*Sec[c])/((a^2
- b^2)*d^3*Sqrt[Csc[c]^2*(Cos[c]^2 + Sin[c]^2)]) + (2*b*f^2*(-((Csc[c]*((d*
x - ArcTan[Cot[c]])*(Log[1 - E^(I*(d*x - ArcTan[Cot[c]]))] - Log[1 + E^(I*(
d*x - ArcTan[Cot[c]]))]) + I*(PolyLog[2, -E^(I*(d*x - ArcTan[Cot[c]]))] - P
olyLog[2, E^(I*(d*x - ArcTan[Cot[c]]))])))/Sqrt[1 + Cot[c]^2]) + (2*ArcTan[
Cot[c]]*ArcTanh[(Sin[c] + Cos[c]*Tan[(d*x)/2])/Sqrt[Cos[c]^2 + Sin[c]^2]])/
Sqrt[Cos[c]^2 + Sin[c]^2]))/((a^2 - b^2)*d^3) + (e^2*Sin[(d*x)/2] + 2*e*f*x
*Sin[(d*x)/2] + f^2*x^2*Sin[(d*x)/2])/((a + b)*d*(Cos[c/2] - Sin[c/2])*(Cos
[c/2 + (d*x)/2] - Sin[c/2 + (d*x)/2])) + (e^2*Sin[(d*x)/2] + 2*e*f*x*Sin[(d
*x)/2] + f^2*x^2*Sin[(d*x)/2])/((a - b)*d*(Cos[c/2] + Sin[c/2])*(Cos[c/2 +
(d*x)/2] + Sin[c/2 + (d*x)/2]))
```

fricas [C] time = 0.81, size = 2677, normalized size = 4.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(4*b^3*f^2*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*polylog(3, 1/2*(2*I*a*co
s(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2))/b) - 4*b^3*f^2*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*polyl
og(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*
sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 4*b^3*f^2*sqrt(-(a^2 - b^2)/b^2)
*cos(d*x + c)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b
*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 4*b^3*f^2*sq
rt(-(a^2 - b^2)/b^2)*cos(d*x + c)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a
*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
))/b) - 4*(a^2*b - b^3)*d^2*f^2*x^2 - 8*(a^2*b - b^3)*d^2*e*f*x - 4*(a^2*b
```

- b^3)*d^2*e^2 + 4*I*(a^3 - a^2*b - a*b^2 + b^3)*f^2*cos(d*x + c)*dilog(I*c
os(d*x + c) + sin(d*x + c)) - 4*I*(a^3 + a^2*b - a*b^2 - b^3)*f^2*cos(d*x +
 c)*dilog(I*cos(d*x + c) - sin(d*x + c)) - 4*I*(a^3 - a^2*b - a*b^2 + b^3)*
f^2*cos(d*x + c)*dilog(-I*cos(d*x + c) + sin(d*x + c)) + 4*I*(a^3 + a^2*b -
 a*b^2 - b^3)*f^2*cos(d*x + c)*dilog(-I*cos(d*x + c) - sin(d*x + c)) + 2*(-
2*I*b^3*d*f^2*x - 2*I*b^3*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*dilog(
-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(2*I*b^3*d*f^2*x + 2*I*b^
3*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*dilog(-1/2*(2*I*a*cos(d*x + c)
 + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^
2)/b^2) + 2*b)/b + 1) + 2*(2*I*b^3*d*f^2*x + 2*I*b^3*d*e*f)*sqrt(-(a^2 - b^
2)/b^2)*cos(d*x + c)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2
*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) +
 2*(-2*I*b^3*d*f^2*x - 2*I*b^3*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*d
ilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b
*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(b^3*d^2*e^2 - 2*b^
3*c*d*e*f + b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(2*b*cos(d*
x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(b^3*
d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*
log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*
I*a) + 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)
*cos(d*x + c)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 -
 b^2)/b^2) + 2*I*a) + 2*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*sqrt(-(
a^2 - b^2)/b^2)*cos(d*x + c)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2
*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x +
 2*b^3*c*d*e*f - b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(1/2*(
2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c
))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x
+ 2*b^3*c*d*e*f - b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(1/2*
(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x
 + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(1/2
*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f
*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(1
/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*
x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 4*((a^3 + a^2*b - a*b^2 - b^3)*d
*e*f - (a^3 + a^2*b - a*b^2 - b^3)*c*f^2)*cos(d*x + c)*log(cos(d*x + c) + I
*sin(d*x + c) + I) + 4*((a^3 - a^2*b - a*b^2 + b^3)*d*e*f - (a^3 - a^2*b -
a*b^2 + b^3)*c*f^2)*cos(d*x + c)*log(cos(d*x + c) - I*sin(d*x + c) + I) + 4
*((a^3 + a^2*b - a*b^2 - b^3)*d*f^2*x + (a^3 + a^2*b - a*b^2 - b^3)*c*f^2)*
cos(d*x + c)*log(I*cos(d*x + c) + sin(d*x + c) + 1) + 4*((a^3 - a^2*b - a*b
^2 + b^3)*d*f^2*x + (a^3 - a^2*b - a*b^2 + b^3)*c*f^2)*cos(d*x + c)*log(I*c
os(d*x + c) - sin(d*x + c) + 1) + 4*((a^3 + a^2*b - a*b^2 - b^3)*d*f^2*x +
(a^3 + a^2*b - a*b^2 - b^3)*c*f^2)*cos(d*x + c)*log(-I*cos(d*x + c) + sin(d

```
*x + c) + 1) + 4*((a^3 - a^2*b - a*b^2 + b^3)*d*f^2*x + (a^3 - a^2*b - a*b^
2 + b^3)*c*f^2)*cos(d*x + c)*log(-I*cos(d*x + c) - sin(d*x + c) + 1) + 4*((
a^3 + a^2*b - a*b^2 - b^3)*d*e*f - (a^3 + a^2*b - a*b^2 - b^3)*c*f^2)*cos(d
*x + c)*log(-cos(d*x + c) + I*sin(d*x + c) + I) + 4*((a^3 - a^2*b - a*b^2 +
 b^3)*d*e*f - (a^3 - a^2*b - a*b^2 + b^3)*c*f^2)*cos(d*x + c)*log(-cos(d*x
+ c) - I*sin(d*x + c) + I) + 4*((a^3 - a*b^2)*d^2*f^2*x^2 + 2*(a^3 - a*b^2)
*d^2*e*f*x + (a^3 - a*b^2)*d^2*e^2)*sin(d*x + c))/((a^4 - 2*a^2*b^2 + b^4)*
d^3*cos(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \sec(dx+c)^2}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*sec(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [F] time = 5.49, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^2 \left(\sec^2(dx+c)\right)}{a+b\sin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*sec(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*sec(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^2/(cos(c + d*x)^2*(a + b*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^2 \sec^2\left(c + dx\right)}{a + b\sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*sec(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*sec(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.312 $\int \frac{(e+fx)\sec^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=349

$$\frac{b^2 f \text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{d^2\left(a^2-b^2\right)^{3/2}}-\frac{b^2 f \text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{d^2\left(a^2-b^2\right)^{3/2}}+\frac{bf\tanh^{-1}(\sin(c+dx))}{d^2\left(a^2-b^2\right)}+\frac{af\log(\cos(c+dx))}{d^2\left(a^2-b^2\right)}+\frac{ib^2(e+fx)\log\left(1-\frac{ibe^{i(}}{a-\sqrt{}}\right.}{d\left(a^2-b^2\right)^{3/2}}$$

```
[Out] b*f*arctanh(sin(d*x+c))/(a^2-b^2)/d^2+a*f*ln(cos(d*x+c))/(a^2-b^2)/d^2+I*b^
2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/d-I*
b^2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/d+
b^2*f*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/d^2
-b^2*f*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/(a^2-b^2)^(3/2)/d^
2-b*(f*x+e)*sec(d*x+c)/(a^2-b^2)/d+a*(f*x+e)*tan(d*x+c)/(a^2-b^2)/d
```

Rubi [A] time = 0.79, antiderivative size = 349, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423, Rules used = {4533, 3323, 2264, 2190, 2279, 2391, 6742, 4184, 3475, 4409, 3770}

$$\frac{b^2 f \text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{d^2\left(a^2-b^2\right)^{3/2}}-\frac{b^2 f \text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{d^2\left(a^2-b^2\right)^{3/2}}+\frac{bf\tanh^{-1}(\sin(c+dx))}{d^2\left(a^2-b^2\right)}+\frac{af\log(\cos(c+dx))}{d^2\left(a^2-b^2\right)}+\frac{ib^2(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Sec[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (b*f*ArcTanh[Sin[c + d*x]])/((a^2 - b^2)*d^2) + (I*b^2*(e + f*x)*Log[1 - (I
*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d) - (I*b^2*
(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2
)^(3/2)*d) + (a*f*Log[Cos[c + d*x]])/((a^2 - b^2)*d^2) + (b^2*f*PolyLog[2,
(I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/((a^2 - b^2)^(3/2)*d^2) - (b^
2*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/((a^2 - b^2)^(
3/2)*d^2) - (b*(e + f*x)*Sec[c + d*x])/((a^2 - b^2)*d) + (a*(e + f*x)*Tan[c
 + d*x])/((a^2 - b^2)*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4184

```
Int[csc[(e_.) + (f_.)*(x_)]^2*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> -Sim
p[((c + d*x)^m*Cot[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Co
t[e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 4409

```
Int[((c_.) + (d_.)*(x_))^(m_.)*Sec[(a_.) + (b_.)*(x_)]^(n_.)*Tan[(a_.) + (b
_.)*(x_)]^(p_.), x_Symbol] :> Simp[((c + d*x)^m*Sec[a + b*x]^n)/(b*n), x] -
 Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Sec[a + b*x]^n, x], x] /; FreeQ[{a
, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4533

```
Int[(((e_.) + (f_.)*(x_))^(m_.)*Sec[(c_.) + (d_.)*(x_)]^(n_.))/((a_) + (b_.
)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> -Dist[b^2/(a^2 - b^2), Int[((e + f
*x)^m*Sec[c + d*x]^(n - 2))/(a + b*Sin[c + d*x]), x], x] + Dist[1/(a^2 - b^
2), Int[(e + f*x)^m*Sec[c + d*x]^n*(a - b*Sin[c + d*x]), x], x] /; FreeQ[{a
, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[a^2 - b^2, 0] && IGtQ[n, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{(e+fx)\sec^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\sec^2(c+dx)(a-b\sin(c+dx))\,dx}{a^2-b^2} - \frac{b^2\int \frac{e+fx}{a+b\sin(c+dx)}\,dx}{a^2-b^2}$$

$$= \frac{\int \left(a(e+fx)\sec^2(c+dx) - b(e+fx)\sec(c+dx)\tan(c+dx)\right)\,dx}{a^2-b^2} - \frac{\left(2b^2\right)\int \frac{e}{ib+2a}}{a^2}$$

$$= \frac{\left(2ib^3\right)\int \frac{e^{i(c+dx)}(e+fx)}{2a-2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\left(a^2-b^2\right)^{3/2}} - \frac{\left(2ib^3\right)\int \frac{e^{i(c+dx)}(e+fx)}{2a+2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\left(a^2-b^2\right)^{3/2}} + \frac{a\int (e+fx)\,\mathrm{s}}{a^2}$$

$$= \frac{ib^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{ib^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{b(e+fx)\sec(c}{\left(a^2-b^2\right)}$$

$$= \frac{bf\tanh^{-1}(\sin(c+dx))}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{ib^2(e+fx)\log\left(1-\frac{i}{a+}\right)}{\left(a^2-b^2\right)^{3/2}d}$$

$$= \frac{bf\tanh^{-1}(\sin(c+dx))}{\left(a^2-b^2\right)d^2} + \frac{ib^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d} - \frac{ib^2(e+fx)\log\left(1-\frac{i}{a+}\right)}{\left(a^2-b^2\right)^{3/2}d}$$

Mathematica [B] time = 9.62, size = 842, normalized size = 2.41

$$\frac{d(e+fx)\left(\frac{2(de-cf)\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}}-\frac{if\left(\log\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)\log\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)+\sqrt{b^2-a^2}}{-ia+b+\sqrt{b^2-a^2}}\right)+\mathrm{Li}_2\left(\frac{a\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)}{a+i\left(b+\sqrt{b^2-a^2}\right)}\right)\right)}{\sqrt{b^2-a^2}}+\frac{if\left(\log\left(i\tan\left(\frac{1}{2}(c+dx)\right)+1\right)\log\left(\frac{b+a\cdots}{\cdots}\right)\cdots\right)}{\cdots}\cdots\right)}{\left(b^2-a^2\right)\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Sec[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((b*d*(e + f*x))/(-a^2 + b^2) + (f*Log[Cos[(c + d*x)/2] - Sin[(c + d*x)/2]]
)/(a + b) + (f*Log[Cos[(c + d*x)/2] + Sin[(c + d*x)/2]])/(a - b) + (b^2*d*(
e + f*x)*((2*(d*e - c*f)*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/
Sqrt[a^2 - b^2] - (I*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^
2] + a*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(
1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2]
 + (I*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c +
 d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 + I*Tan[(c + d*x
)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1 - I
*Tan[(c + d*x)/2]]*Log[(-b + Sqrt[-a^2 + b^2] - a*Tan[(c + d*x)/2])/(I*a -
b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(I + Tan[(c + d*x)/2]))/(I*a - b + S
qrt[-a^2 + b^2])]))/Sqrt[-a^2 + b^2] - (I*f*(Log[1 + I*Tan[(c + d*x)/2]]*Lo
g[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])]
 + PolyLog[2, (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))]))
/Sqrt[-a^2 + b^2]))/((-a^2 + b^2)*(d*e - c*f + I*f*Log[1 - I*Tan[(c + d*x)/
2]] - I*f*Log[1 + I*Tan[(c + d*x)/2]])) + (d*(e + f*x)*Sin[(c + d*x)/2])/((
a + b)*(Cos[(c + d*x)/2] - Sin[(c + d*x)/2])) + (d*(e + f*x)*Sin[(c + d*x)/
2])/((a - b)*(Cos[(c + d*x)/2] + Sin[(c + d*x)/2])))/d^2
```

fricas [B] time = 0.73, size = 1279, normalized size = 3.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(-2*I*b^3*f*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*dilog(-1/2*(2*I*a*cos(d
*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*b^3*f*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c
)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I
*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*b^3*f*sqrt(-(a^
```

```
2 - b^2)/b^2)*cos(d*x + c)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x +
c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
+ 1) - 2*I*b^3*f*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*dilog(-1/2*(-2*I*a*cos
(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-
(a^2 - b^2)/b^2) + 2*b)/b + 1) - 4*(a^2*b - b^3)*d*f*x + 2*(a^3 + a^2*b - a
*b^2 - b^3)*f*cos(d*x + c)*log(sin(d*x + c) + 1) + 2*(a^3 - a^2*b - a*b^2 +
 b^3)*f*cos(d*x + c)*log(-sin(d*x + c) + 1) - 2*(b^3*d*e - b^3*c*f)*sqrt(-(
a^2 - b^2)/b^2)*cos(d*x + c)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*
b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(b^3*d*e - b^3*c*f)*sqrt(-(a^2 - b^2)
/b^2)*cos(d*x + c)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a
^2 - b^2)/b^2) - 2*I*a) + 2*(b^3*d*e - b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*cos(
d*x + c)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)
/b^2) + 2*I*a) + 2*(b^3*d*e - b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*
log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2
*I*a) - 2*(b^3*d*f*x + b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(1/2
*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b^3*d*f*x + b^3*c*f)*sqrt(-(a^2
- b^2)/b^2)*cos(d*x + c)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2
*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(
b^3*d*f*x + b^3*c*f)*sqrt(-(a^2 - b^2)/b^2)*cos(d*x + c)*log(1/2*(-2*I*a*co
s(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b^3*d*f*x + b^3*c*f)*sqrt(-(a^2 - b^2)/b^2
)*cos(d*x + c)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d
*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 4*(a^2*b - b
^3)*d*e + 4*((a^3 - a*b^2)*d*f*x + (a^3 - a*b^2)*d*e)*sin(d*x + c))/((a^4 -
 2*a^2*b^2 + b^4)*d^2*cos(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\sec(dx+c)^2}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*sec(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [B] time = 0.52, size = 1542, normalized size = 4.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*sec(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] 2*(f*x+e)*(-I*a+b*exp(I*(d*x+c)))/d/(-a^2+b^2)/(1+exp(2*I*(d*x+c)))+2*I/(a^
2-b^2)/d^2*b^2*c*f/(a+b)/(a-b)/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*
x+c))-2*a)/(-a^2+b^2)^(1/2))*a^2-I/(a^2-b^2)^(3/2)/d*b^4*f/(a+b)/(a-b)*ln((
I*b*exp(I*(d*x+c))+(a^2-b^2)^(1/2)-a)/(-a+(a^2-b^2)^(1/2)))*x-2*I/(a^2-b^2)
/d*b^2*e/(a+b)/(a-b)/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)
/(-a^2+b^2)^(1/2))*a^2+2*I/(a^2-b^2)/d*b^4*e/(a+b)/(a-b)/(-a^2+b^2)^(1/2)*a
rctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))-I/(a^2-b^2)^(3/2)/d*
b^2*f/(a+b)/(a-b)*ln(-(I*b*exp(I*(d*x+c))-(a^2-b^2)^(1/2)-a)/(a+(a^2-b^2)^(
1/2)))*a^2*x+I/(a^2-b^2)^(3/2)/d*b^4*f/(a+b)/(a-b)*ln(-(I*b*exp(I*(d*x+c))-
(a^2-b^2)^(1/2)-a)/(a+(a^2-b^2)^(1/2)))*x+1/(a^2-b^2)^(3/2)/d^2*b^4*f/(a+b)
/(a-b)*dilog(-(I*b*exp(I*(d*x+c))-(a^2-b^2)^(1/2)-a)/(a+(a^2-b^2)^(1/2)))-1
/(a^2-b^2)^(3/2)/d^2*b^4*f/(a+b)/(a-b)*dilog((I*b*exp(I*(d*x+c))+(a^2-b^2)^
(1/2)-a)/(-a+(a^2-b^2)^(1/2)))+4/(a^2-b^2)/d^2*a^2*f/(4*a-4*b)*ln(exp(I*(d*
x+c))+I)+4/(a^2-b^2)/d^2*a^2*f/(4*a+4*b)*ln(exp(I*(d*x+c))-I)-4/(a^2-b^2)/d
^2*b^2*f/(4*a-4*b)*ln(exp(I*(d*x+c))+I)-4/(a^2-b^2)/d^2*b^2*f/(4*a+4*b)*ln(
exp(I*(d*x+c))-I)-I/(a^2-b^2)^(3/2)/d^2*b^4*f/(a+b)/(a-b)*ln((I*b*exp(I*(d*
x+c))+(a^2-b^2)^(1/2)-a)/(-a+(a^2-b^2)^(1/2)))*c-2*I/(a^2-b^2)/d^2*b^4*c*f/
(a+b)/(a-b)/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^
2)^(1/2))-1/(a^2-b^2)^(3/2)/d^2*b^2*f/(a+b)/(a-b)*dilog(-(I*b*exp(I*(d*x+c)
)-(a^2-b^2)^(1/2)-a)/(a+(a^2-b^2)^(1/2)))*a^2+1/(a^2-b^2)^(3/2)/d^2*b^2*f/(
a+b)/(a-b)*dilog((I*b*exp(I*(d*x+c))+(a^2-b^2)^(1/2)-a)/(-a+(a^2-b^2)^(1/2)
))*a^2-I/(a^2-b^2)^(3/2)/d^2*b^2*f/(a+b)/(a-b)*ln(-(I*b*exp(I*(d*x+c))-(a^2
-b^2)^(1/2)-a)/(a+(a^2-b^2)^(1/2)))*a^2*c+I/(a^2-b^2)^(3/2)/d*b^2*f/(a+b)/(
a-b)*ln((I*b*exp(I*(d*x+c))+(a^2-b^2)^(1/2)-a)/(-a+(a^2-b^2)^(1/2)))*a^2*x-
2/(a^2-b^2)/d^2*a*f*ln(exp(I*(d*x+c)))+I/(a^2-b^2)^(3/2)/d^2*b^4*f/(a+b)/(a
-b)*ln(-(I*b*exp(I*(d*x+c))-(a^2-b^2)^(1/2)-a)/(a+(a^2-b^2)^(1/2)))*c+I/(a^
2-b^2)^(3/2)/d^2*b^2*f/(a+b)/(a-b)*ln((I*b*exp(I*(d*x+c))+(a^2-b^2)^(1/2)-a
)/(-a+(a^2-b^2)^(1/2)))*a^2*c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)/(cos(c + d*x)^2*(a + b*sin(c + d*x))),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e + fx)\sec^2(c + dx)}{a + b\sin(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*sec(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*sec(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.313 $\int \frac{\sec^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=84

$$-\frac{2b^2\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{d\left(a^2-b^2\right)^{3/2}}-\frac{\sec(c+dx)(b-a\sin(c+dx))}{d\left(a^2-b^2\right)}$$

```
[Out] -2*b^2*arctan((b+a*tan(1/2*d*x+1/2*c))/(a^2-b^2)^(1/2))/(a^2-b^2)^(3/2)/d-s
ec(d*x+c)*(b-a*sin(d*x+c))/(a^2-b^2)/d
```

Rubi [A] time = 0.10, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {2696, 12, 2660, 618, 204}

$$-\frac{2b^2\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{d\left(a^2-b^2\right)^{3/2}}-\frac{\sec(c+dx)(b-a\sin(c+dx))}{d\left(a^2-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Sec[c + d*x]^2/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-2*b^2*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/((a^2 - b^2)^(3/2
)*d) - (Sec[c + d*x]*(b - a*Sin[c + d*x]))/((a^2 - b^2)*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2696

```
Int[(cos[(e_.) + (f_.)*(x_)]*(g_.))^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x
_)])^(m_), x_Symbol] :> Simp[((g*Cos[e + f*x])^(p + 1)*(a + b*Sin[e + f*x])
^(m + 1)*(b - a*Sin[e + f*x]))/(f*g*(a^2 - b^2)*(p + 1)), x] + Dist[1/(g^2*
(a^2 - b^2)*(p + 1)), Int[(g*Cos[e + f*x])^(p + 2)*(a + b*Sin[e + f*x])^m*(
a^2*(p + 2) - b^2*(m + p + 2) + a*b*(m + p + 3)*Sin[e + f*x]), x], x] /; Fr
eeQ[{a, b, e, f, g, m}, x] && NeQ[a^2 - b^2, 0] && LtQ[p, -1] && IntegersQ[
2*m, 2*p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sec^2(c+dx)}{a+b\sin(c+dx)}\,dx &= -\frac{\sec(c+dx)(b-a\sin(c+dx))}{\left(a^2-b^2\right)d}+\frac{\int \frac{b^2}{a+b\sin(c+dx)}\,dx}{-a^2+b^2}\\
&= -\frac{\sec(c+dx)(b-a\sin(c+dx))}{\left(a^2-b^2\right)d}-\frac{b^2\int \frac{1}{a+b\sin(c+dx)}\,dx}{a^2-b^2}\\
&= -\frac{\sec(c+dx)(b-a\sin(c+dx))}{\left(a^2-b^2\right)d}-\frac{\left(2b^2\right)\mathrm{Subst}\left(\int \frac{1}{a+2bx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(c+dx)\right)\right)}{\left(a^2-b^2\right)d}\\
&= -\frac{\sec(c+dx)(b-a\sin(c+dx))}{\left(a^2-b^2\right)d}+\frac{\left(4b^2\right)\mathrm{Subst}\left(\int \frac{1}{-4\left(a^2-b^2\right)-x^2}\,dx,x,2b+2a\tan\left(\frac{1}{2}(c+\right.\right.}{\left(a^2-b^2\right)d}\\
&= -\frac{2b^2\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{\left(a^2-b^2\right)^{3/2}d}-\frac{\sec(c+dx)(b-a\sin(c+dx))}{\left(a^2-b^2\right)d}
\end{aligned}
$$

Mathematica [A] time = 0.26, size = 152, normalized size = 1.81

$$\frac{\sqrt{a^2-b^2}\,(-a\sin(c+dx)+b(-\cos(c+dx))+b)+2b^2\cos(c+dx)\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{d(b-a)(a+b)\sqrt{a^2-b^2}\left(\cos\left(\frac{1}{2}(c+dx)\right)-\sin\left(\frac{1}{2}(c+dx)\right)\right)\left(\sin\left(\frac{1}{2}(c+dx)\right)+\cos\left(\frac{1}{2}(c+dx)\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sec[c + d*x]^2/(a + b*Sin[c + d*x]),x]
```

```
[Out] (2*b^2*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]]*Cos[c + d*x] + Sqrt
[a^2 - b^2]*(b - b*Cos[c + d*x] - a*Sin[c + d*x]))/((-a + b)*(a + b)*Sqrt[a
^2 - b^2]*d*(Cos[(c + d*x)/2] - Sin[(c + d*x)/2])*(Cos[(c + d*x)/2] + Sin[(
c + d*x)/2]))
```

fricas [A] time = 0.47, size = 305, normalized size = 3.63

$$\left[\frac{\sqrt{-a^2+b^2}\,b^2\cos(dx+c)\log\left(\frac{(2a^2-b^2)\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2+2(a\cos(dx+c)\sin(dx+c)+b\cos(dx+c))\sqrt{-a^2+b^2}}{b^2\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2}\right)-2a^2b\cdots}{2(a^4-2a^2b^2+b^4)d\cos(dx+c)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(-a^2 + b^2)*b^2*cos(d*x + c)*log(((2*a^2 - b^2)*cos(d*x + c)^2 -
 2*a*b*sin(d*x + c) - a^2 - b^2 + 2*(a*cos(d*x + c)*sin(d*x + c) + b*cos(d*
x + c))*sqrt(-a^2 + b^2))/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 -
b^2)) - 2*a^2*b + 2*b^3 + 2*(a^3 - a*b^2)*sin(d*x + c))/((a^4 - 2*a^2*b^2 +
 b^4)*d*cos(d*x + c)), (sqrt(a^2 - b^2)*b^2*arctan(-(a*sin(d*x + c) + b)/(s
qrt(a^2 - b^2)*cos(d*x + c)))*cos(d*x + c) - a^2*b + b^3 + (a^3 - a*b^2)*si
n(d*x + c))/((a^4 - 2*a^2*b^2 + b^4)*d*cos(d*x + c))]
```

giac [A] time = 1.98, size = 107, normalized size = 1.27

$$-\frac{2\left(\frac{\left(\pi\left\lfloor\frac{dx+c}{2\pi}+\frac{1}{2}\right\rfloor\mathrm{sgn}(a)+\arctan\left(\frac{a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)+b}{\sqrt{a^2-b^2}}\right)\right)b^2}{(a^2-b^2)^{\frac{3}{2}}}+\frac{a\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)-b}{(a^2-b^2)\left(\tan\left(\frac{1}{2}dx+\frac{1}{2}c\right)^2-1\right)}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

[Out] -2*((pi*floor(1/2*(d*x + c)/pi + 1/2)*sgn(a) + arctan((a*tan(1/2*d*x + 1/2*c) + b)/sqrt(a^2 - b^2)))*b^2/(a^2 - b^2)^(3/2) + (a*tan(1/2*d*x + 1/2*c) - b)/((a^2 - b^2)*(tan(1/2*d*x + 1/2*c)^2 - 1)))/d

maple [A] time = 0.00, size = 117, normalized size = 1.39

$$-\frac{2}{d\,(2a+2b)\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)-1\right)}-\frac{2}{d\,(2a-2b)\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+1\right)}-\frac{2b^{2}\arctan\left(\frac{2a\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+2b}{2\sqrt{a^{2}-b^{2}}}\right)}{d\,(a-b)\,(a+b)\,\sqrt{a^{2}-b^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(sec(d*x+c)^2/(a+b*sin(d*x+c)),x)

[Out] -2/d/(2*a+2*b)/(tan(1/2*d*x+1/2*c)-1)-2/d/(2*a-2*b)/(tan(1/2*d*x+1/2*c)+1)-2/d*b^2/(a-b)/(a+b)/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)/(a^2-b^2)^(1/2))

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")

[Out] Exception raised: ValueError >> Computation failed since Maxima requested additional constraints; using the 'assume' command before evaluation *may* help (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for more details)Is 4*b^2-4*a^2 positive or negative?

mupad [B] time = 4.23, size = 149, normalized size = 1.77

$$\frac{\frac{2\,b}{a^2-b^2}-\frac{2\,a\,\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{a^2-b^2}}{d\,\left({\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)}^2-1\right)}-\frac{2\,b^2\,\mathrm{atan}\left(\frac{\frac{b^2\,\left(2\,a^2\,b-2\,b^3\right)}{{\left(a+b\right)}^{3/2}\,{\left(a-b\right)}^{3/2}}+\frac{2\,a\,b^2\,\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)\,\left(a^2-b^2\right)}{{\left(a+b\right)}^{3/2}\,{\left(a-b\right)}^{3/2}}}{2\,b^2}\right)}{d\,{\left(a+b\right)}^{3/2}\,{\left(a-b\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(cos(c + d*x)^2*(a + b*sin(c + d*x))),x)

[Out] ((2*b)/(a^2 - b^2) - (2*a*tan(c/2 + (d*x)/2))/(a^2 - b^2))/(d*(tan(c/2 + (d*x)/2)^2 - 1)) - (2*b^2*atan(((b^2*(2*a^2*b - 2*b^3))/((a + b)^(3/2)*(a - b

```
)^(3/2)) + (2*a*b^2*tan(c/2 + (d*x)/2)*(a^2 - b^2))/((a + b)^(3/2)*(a - b)^
(3/2)))/(2*b^2)))/(d*(a + b)^(3/2)*(a - b)^(3/2))
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sec^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sec(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral(sec(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.314 $\int \frac{(e+fx)^m \cos^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\cos^2(c+dx)(e+fx)^m}{a+b\sin(c+dx)},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*cos(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \cos^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Cos[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
[Out] Defer[Int][((e + f*x)^m*Cos[c + d*x]^2)/(a + b*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \cos^2(c+dx)}{a+b\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \cos^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Mathematica [A] time = 6.14, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \cos^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Cos[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
[Out] Integrate[((e + f*x)^m*Cos[c + d*x]^2)/(a + b*Sin[c + d*x]), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^m \cos\left(dx+c\right)^2}{b\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*cos(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\cos\left(dx+c\right)^{2}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*cos(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [A] time = 0.37, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\left(\cos^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*cos(d*x+c)^2/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^m*cos(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\cos\left(dx+c\right)^{2}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*cos(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cos\left(c+d\,x\right)^{2}\,\left(e+f\,x\right)^{m}}{a+b\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*(e + f*x)^m)/(a + b*sin(c + d*x)),x)
[Out] int((cos(c + d*x)^2*(e + f*x)^m)/(a + b*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{m}\cos^{2}\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*cos(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m*cos(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.315 $\int \frac{(e+fx)^m \cos(c+dx)}{a+b\sin(c+dx)} dx$

Optimal. Leaf size=29

$$\text{Int}\left(\frac{\cos(c+dx)(e+fx)^m}{a+b\sin(c+dx)},x\right)$$

[Out] Unintegrable((f*x+e)^m*cos(d*x+c)/(a+b*sin(d*x+c)),x)

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \cos(c+dx)}{a+b\sin(c+dx)} \, dx$$

Verification is Not applicable to the result.

[In] Int[((e + f*x)^m*Cos[c + d*x])/(a + b*Sin[c + d*x]),x]

[Out] Defer[Int][((e + f*x)^m*Cos[c + d*x])/(a + b*Sin[c + d*x]), x]

Rubi steps

$$\int \frac{(e+fx)^m \cos(c+dx)}{a+b\sin(c+dx)} \, dx = \int \frac{(e+fx)^m \cos(c+dx)}{a+b\sin(c+dx)} \, dx$$

Mathematica [A] time = 3.46, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \cos(c+dx)}{a+b\sin(c+dx)} \, dx$$

Verification is Not applicable to the result.

[In] Integrate[((e + f*x)^m*Cos[c + d*x])/(a + b*Sin[c + d*x]),x]

[Out] Integrate[((e + f*x)^m*Cos[c + d*x])/(a + b*Sin[c + d*x]), x]

fricas [A] time = 0.43, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^m \cos\left(dx+c\right)}{b\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*cos(d*x + c)/(b*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m \cos\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*cos(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [A] time = 0.22, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m \cos\left(dx+c\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*cos(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^m*cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^m \cos\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*cos(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*cos(d*x + c)/(b*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\cos\left(c+d\,x\right)\,{\left(e+f\,x\right)}^m}{a+b\,\sin\left(c+d\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x)^m)/(a + b*sin(c + d*x)),x)
[Out] int((cos(c + d*x)*(e + f*x)^m)/(a + b*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^{m} \cos\left(c + dx\right)}{a + b\sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*cos(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m*cos(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.316 $\int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{(e+fx)^m}{a+b\sin(c+dx)},x\right)$$

```
[Out] Unintegrable((f*x+e)^m/(a+b*sin(d*x+c)),x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(e + f*x)^m/(a + b*Sin[c + d*x]),x]
[Out] Defer[Int][(e + f*x)^m/(a + b*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx=\int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx$$

Mathematica [A] time = 0.11, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(e + f*x)^m/(a + b*Sin[c + d*x]),x]
[Out] Integrate[(e + f*x)^m/(a + b*Sin[c + d*x]), x]
```

fricas [A] time = 0.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^m}{b\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+b*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m/(b*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m/(b*sin(d*x + c) + a), x)
```

maple [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m}{a+b\sin(dx+c)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^m/(a+b*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)^m}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m/(a+b*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m/(b*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{(e+f\,x)^m}{a+b\,\sin(c+d\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(a + b*sin(c + d*x)),x)
[Out] int((e + f*x)^m/(a + b*sin(c + d*x)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m/(a + b*sin(c + d*x)), x)
```

3.317 $\int \frac{(e+fx)^m \sec(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=29

$$\operatorname{Int}\left(\frac{\sec(c+dx)(e+fx)^m}{a+b\sin(c+dx)},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \sec(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Sec[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] Defer[Int][((e + f*x)^m*Sec[c + d*x])/(a + b*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \sec(c+dx)}{a+b\sin(c+dx)}\,dx=\int \frac{(e+fx)^m \sec(c+dx)}{a+b\sin(c+dx)}\,dx$$

Mathematica [A] time = 148.60, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \sec(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Sec[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] Integrate[((e + f*x)^m*Sec[c + d*x])/(a + b*Sin[c + d*x]), x]
```

fricas [A] time = 0.45, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\left(fx+e\right)^m \sec\left(dx+c\right)}{b\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*sec(d*x + c)/(b*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\sec\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*sec(d*x + c)/(b*sin(d*x + c) + a), x)
```

maple [A] time = 0.13, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\sec\left(dx+c\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*sec(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^m*sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m}\sec\left(dx+c\right)}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*sec(d*x + c)/(b*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(e+f\,x\right)^{m}}{\cos\left(c+d\,x\right)\,\left(a+b\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(cos(c + d*x)*(a + b*sin(c + d*x))),x)
[Out] int((e + f*x)^m/(cos(c + d*x)*(a + b*sin(c + d*x))), x)
```

sympy [A]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{m}\sec\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*sec(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m*sec(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.318 $\int \frac{(e+fx)^m \sec^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=31

$$\text{Int}\left(\frac{\sec^2(c+dx)(e+fx)^m}{a+b\sin(c+dx)},x\right)$$

```
[Out] Unintegrable((f*x+e)^m*sec(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(e+fx)^m \sec^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((e + f*x)^m*Sec[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
[Out] Defer[Int][((e + f*x)^m*Sec[c + d*x]^2)/(a + b*Sin[c + d*x]), x]
```

Rubi steps

$$\int \frac{(e+fx)^m \sec^2(c+dx)}{a+b\sin(c+dx)}\,dx = \int \frac{(e+fx)^m \sec^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Mathematica [A] time = 21.74, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)^m \sec^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[((e + f*x)^m*Sec[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
[Out] Integrate[((e + f*x)^m*Sec[c + d*x]^2)/(a + b*Sin[c + d*x]), x]
```

fricas [A] time = 0.44, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(fx+e\right)^m \sec\left(dx+c\right)^2}{b\sin\left(dx+c\right)+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
[Out] integral((f*x + e)^m*sec(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m} \sec\left(dx+c\right)^{2}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
[Out] integrate((f*x + e)^m*sec(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [A] time = 0.21, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m} \left(\sec^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*sec(d*x+c)^2/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^m*sec(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{m} \sec\left(dx+c\right)^{2}}{b\sin\left(dx+c\right)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*sec(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
[Out] integrate((f*x + e)^m*sec(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\left(e+f\,x\right)^{m}}{\cos\left(c+d\,x\right)^{2}\,\left(a+b\,\sin\left(c+d\,x\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m/(cos(c + d*x)^2*(a + b*sin(c + d*x))),x)
[Out] int((e + f*x)^m/(cos(c + d*x)^2*(a + b*sin(c + d*x))), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{m}\sec^{2}\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*sec(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**m*sec(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.319 $\int \frac{(e+fx)\cos(c+dx)}{(a+b\sin(c+dx))^2}\,dx$

Optimal. Leaf size=77

$$\frac{2f\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}-\frac{e+fx}{bd(a+b\sin(c+dx))}$$

```
[Out] (-f*x-e)/b/d/(a+b*sin(d*x+c))+2*f*arctan((b+a*tan(1/2*d*x+1/2*c))/(a^2-b^2)
^(1/2))/b/d^2/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {4422, 2660, 618, 204}

$$\frac{2f\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}-\frac{e+fx}{bd(a+b\sin(c+dx))}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] (2*f*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/(b*Sqrt[a^2 - b^2]*d
^2) - (e + f*x)/(b*d*(a + b*Sin[c + d*x]))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
```

```
a^2 - b^2, 0]
```

Rule 4422

```
Int[Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sin[(c
_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sin[c + d*x
])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^(m
- 1)*(a + b*Sin[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x
] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(e+fx)\cos(c+dx)}{(a+b\sin(c+dx))^2}\,dx &= -\frac{e+fx}{bd(a+b\sin(c+dx))}+\frac{f\int \frac{1}{a+b\sin(c+dx)}\,dx}{bd}\\ &= -\frac{e+fx}{bd(a+b\sin(c+dx))}+\frac{(2f)\,\mathrm{Subst}\left(\int \frac{1}{a+2bx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(c+dx)\right)\right)}{bd^2}\\ &= -\frac{e+fx}{bd(a+b\sin(c+dx))}-\frac{(4f)\,\mathrm{Subst}\left(\int \frac{1}{-4\left(a^2-b^2\right)-x^2}\,dx,x,2b+2a\tan\left(\frac{1}{2}(c+dx)\right)\right)}{bd^2}\\ &= \frac{2f\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2}-\frac{e+fx}{bd(a+b\sin(c+dx))}\end{aligned}$$

Mathematica [A] time = 0.44, size = 73, normalized size = 0.95

$$\frac{\frac{2f\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}}-\frac{d(e+fx)}{a+b\sin(c+dx)}}{bd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cos[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] ((2*f*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] - (
d*(e + f*x))/(a + b*Sin[c + d*x]))/(b*d^2)
```

fricas [A] time = 0.49, size = 339, normalized size = 4.40

$$\left[-\frac{2\left(a^2-b^2\right)dfx+2\left(a^2-b^2\right)de+\left(bf\sin\left(dx+c\right)+af\right)\sqrt{-a^2+b^2}\log\left(\frac{\left(2a^2-b^2\right)\cos(dx+c)^2-2ab\sin(dx+c)-a^2-b^2+2(a\cos}{b^2\cos(dx+c)^2-2ab\sin}\right.}{2\left(\left(a^2b^2-b^4\right)d^2\sin\left(dx+c\right)+\left(a^3b-ab^3\right)d^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*(a^2 - b^2)*d*f*x + 2*(a^2 - b^2)*d*e + (b*f*sin(d*x + c) + a*f)*s
qrt(-a^2 + b^2)*log(((2*a^2 - b^2)*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^
2 - b^2 + 2*(a*cos(d*x + c)*sin(d*x + c) + b*cos(d*x + c))*sqrt(-a^2 + b^2)
)/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2)))/((a^2*b^2 - b^4)*
d^2*sin(d*x + c) + (a^3*b - a*b^3)*d^2), -((a^2 - b^2)*d*f*x + (a^2 - b^2)*
d*e + (b*f*sin(d*x + c) + a*f)*sqrt(a^2 - b^2)*arctan(-(a*sin(d*x + c) + b)
/(sqrt(a^2 - b^2)*cos(d*x + c))))/((a^2*b^2 - b^4)*d^2*sin(d*x + c) + (a^3*
b - a*b^3)*d^2)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(fx+e\right)\cos\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cos(d*x + c)/(b*sin(d*x + c) + a)^2, x)
```

maple [C] time = 1.52, size = 194, normalized size = 2.52

$$-\frac{2i\left(fx+e\right)e^{i(dx+c)}}{bd\left(b\,e^{2i(dx+c)}-b+2ia\,e^{i(dx+c)}\right)}-\frac{f\ln\left(e^{i(dx+c)}+\frac{ia\sqrt{-a^2+b^2}-a^2+b^2}{\sqrt{-a^2+b^2}\,b}\right)}{\sqrt{-a^2+b^2}\,d^2b}+\frac{f\ln\left(e^{i(dx+c)}+\frac{ia\sqrt{-a^2+b^2}+a^2-b^2}{\sqrt{-a^2+b^2}\,b}\right)}{\sqrt{-a^2+b^2}\,d^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c))^2,x)
```

```
[Out] -2*I*(f*x+e)*exp(I*(d*x+c))/b/d/(b*exp(2*I*(d*x+c))-b+2*I*a*exp(I*(d*x+c)))
-1/(-a^2+b^2)^(1/2)*f/d^2/b*ln(exp(I*(d*x+c))+(I*a*(-a^2+b^2)^(1/2)-a^2+b^2
)/(-a^2+b^2)^(1/2)/b)+1/(-a^2+b^2)^(1/2)*f/d^2/b*ln(exp(I*(d*x+c))+(I*a*(-a
^2+b^2)^(1/2)+a^2-b^2)/(-a^2+b^2)^(1/2)/b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.01

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x))/(a + b*sin(c + d*x))^2,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.320 $\int \frac{(e+fx)^2 \cos(c+dx)}{(a+b\sin(c+dx))^2}\,dx$

Optimal. Leaf size=280

$$-\frac{2f^2\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}+\frac{2f^2\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}-\frac{2if(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}+\frac{2if(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^2\sqrt{a^2-b^2}}-\frac{}{bd(a}$$

```
[Out] -(f*x+e)^2/b/d/(a+b*sin(d*x+c))-2*I*f*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a
^2-b^2)^(1/2)))/b/d^2/(a^2-b^2)^(1/2)+2*I*f*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))
/(a+(a^2-b^2)^(1/2)))/b/d^2/(a^2-b^2)^(1/2)-2*f^2*polylog(2,I*b*exp(I*(d*x+
c))/(a-(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)^(1/2)+2*f^2*polylog(2,I*b*exp(I*(d
*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)^(1/2)
```

Rubi [A] time = 0.53, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {4422, 3323, 2264, 2190, 2279, 2391}

$$-\frac{2f^2\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}+\frac{2f^2\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^3\sqrt{a^2-b^2}}-\frac{2if(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\sqrt{a^2-b^2}}+\frac{2if(e+fx)\log\left(1-\right.}{bd^2\sqrt{a^2-b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] ((-2*I)*f*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(
b*Sqrt[a^2 - b^2]*d^2) + ((2*I)*f*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(
a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^2) - (2*f^2*PolyLog[2, (I*b*E^(
I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^3) + (2*f^2*Poly
Log[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^3
) - (e + f*x)^2/(b*d*(a + b*Sin[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
```

```
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4422

```
Int[Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sin[(c
_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sin[c + d*x
])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^(m
- 1)*(a + b*Sin[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x
] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos(c+dx)}{(a+b\sin(c+dx))^2}\,dx = -\frac{(e+fx)^2}{bd(a+b\sin(c+dx))} + \frac{(2f)\int \frac{e+fx}{a+b\sin(c+dx)}\,dx}{bd}$$

$$= -\frac{(e+fx)^2}{bd(a+b\sin(c+dx))} + \frac{(4f)\int \frac{e^{i(c+dx)}(e+fx)}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{bd}$$

$$= -\frac{(e+fx)^2}{bd(a+b\sin(c+dx))} - \frac{(4if)\int \frac{e^{i(c+dx)}(e+fx)}{2a-2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\sqrt{a^2-b^2}\,d} + \frac{(4if)\int \frac{e^{i(c+dx)}(e+fx)}{2a+2\sqrt{a^2-b^2}-2ibe^{i(c\cdots}}}{\sqrt{a^2-b^2}\,d}$$

$$= -\frac{2if(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} + \frac{2if(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} - \frac{(e+fx)\cdots}{bd(a+b\sin(\cdots}$$

$$= -\frac{2if(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} + \frac{2if(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} - \frac{(e+fx)\cdots}{bd(a+b\sin(\cdots}$$

$$= -\frac{2if(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} + \frac{2if(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} - \frac{2f^2\text{Li}_2\left(\frac{ibe^{i(c\cdots}}{a-\sqrt{a^{\cdots}}}\right.}{b\sqrt{a^2-b^2}\cdots}$$

Mathematica [A] time = 3.21, size = 311, normalized size = 1.11

$$-\frac{(e+fx)^2}{bd(a+b\sin(c+dx))} + \frac{2if\left(-id\left(2e\sqrt{b^2-a^2}\,\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right) + fx\sqrt{a^2-b^2}\left(\log\left(1-\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right) - \log\left(1+\frac{b\cdots}{\sqrt{b\cdots}}\right.\right.\right.\right.}{bd^3\sqrt{-\left(a^2-b^2\right)^2}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] ((2*I)*f*((-I)*d*(2*Sqrt[-a^2 + b^2]*e*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqr
t[a^2 - b^2]] + Sqrt[a^2 - b^2]*f*x*(Log[1 - (b*E^(I*(c + d*x)))/((-I)*a +
Sqrt[-a^2 + b^2])] - Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])])
) - Sqrt[a^2 - b^2]*f*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 +
b^2])] + Sqrt[a^2 - b^2]*f*PolyLog[2, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^
2 + b^2]))]))/(b*Sqrt[-(a^2 - b^2)^2]*d^3) - (e + f*x)^2/(b*d*(a + b*Sin[c
+ d*x]))
```

fricas [B] time = 0.73, size = 1401, normalized size = 5.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] -((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2)*d^2*e*f*x + (a^2 - b^2)*d^2*e^2 +
 (-I*b^2*f^2*sin(d*x + c) - I*a*b*f^2)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2
*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (I*b^2*f^2*sin(d*x + c) + I*a*b*f^
2)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c)
 - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b +
1) + (I*b^2*f^2*sin(d*x + c) + I*a*b*f^2)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2
*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-I*b^2*f^2*sin(d*x + c) - I*a
*b*f^2)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*
x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b
)/b + 1) - (a*b*d*e*f - a*b*c*f^2 + (b^2*d*e*f - b^2*c*f^2)*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(
-(a^2 - b^2)/b^2) + 2*I*a) - (a*b*d*e*f - a*b*c*f^2 + (b^2*d*e*f - b^2*c*f^
2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*
x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + (a*b*d*e*f - a*b*c*f^2 + (b^
2*d*e*f - b^2*c*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x
+ c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + (a*b*d*e*
f - a*b*c*f^2 + (b^2*d*e*f - b^2*c*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) -
 2*I*a) - (a*b*d*f^2*x + a*b*c*f^2 + (b^2*d*f^2*x + b^2*c*f^2)*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2
*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (a*
b*d*f^2*x + a*b*c*f^2 + (b^2*d*f^2*x + b^2*c*f^2)*sin(d*x + c))*sqrt(-(a^2
- b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x +
 c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - (a*b*d*f^2*x + a
*b*c*f^2 + (b^2*d*f^2*x + b^2*c*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*l
og(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*si
n(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (a*b*d*f^2*x + a*b*c*f^2 + (
b^2*d*f^2*x + b^2*c*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I
*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*
sqrt(-(a^2 - b^2)/b^2) + 2*b)/b))/((a^2*b^2 - b^4)*d^3*sin(d*x + c) + (a^3*
b - a*b^3)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\cos\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cos(d*x + c)/(b*sin(d*x + c) + a)^2, x)
```

maple [B] time = 1.48, size = 606, normalized size = 2.16

$$-\frac{2i\left(f^2x^2+2fex+e^2\right)e^{i(dx+c)}}{bd\left(b\,e^{2i(dx+c)}-b+2ia\,e^{i(dx+c)}\right)}+\frac{4ife\arctan\left(\frac{2ib\,e^{i(dx+c)}-2a}{2\sqrt{-a^2+b^2}}\right)}{d^2b\sqrt{-a^2+b^2}}+\frac{2f^2\ln\left(\frac{ia+b\,e^{i(dx+c)}-\sqrt{-a^2+b^2}}{ia-\sqrt{-a^2+b^2}}\right)x}{d^2b\sqrt{-a^2+b^2}}+\frac{2f^2\ln\left(\frac{ia+b\,e^{i(dx+c)}-\sqrt{}}{ia-\sqrt{-a^2}}\right.}{d^3b\sqrt{-a^2+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c))^2,x)
```

```
[Out] -2*I*(f^2*x^2+2*e*f*x+e^2)*exp(I*(d*x+c))/b/d/(b*exp(2*I*(d*x+c))-b+2*I*a*e
xp(I*(d*x+c)))+4*I/d^2/b*f*e/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+
c))-2*a)/(-a^2+b^2)^(1/2))+2/d^2/b*f^2/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*
x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x+2/d^3/b*f^2/(-a^2+b^2)^(1
/2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c-2/
d^2/b*f^2/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+
(-a^2+b^2)^(1/2)))*x-2/d^3/b*f^2/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+
(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-2*I/d^3/b*f^2/(-a^2+b^2)^(1/2)*
dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))+2*I/d
^3/b*f^2/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*
a+(-a^2+b^2)^(1/2)))-4*I/d^3/b*f^2*c/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp
(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x))^2,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)/(a+b*sin(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.321 $\int \frac{(e+fx)^3\cos(c+dx)}{(a+b\sin(c+dx))^2}\,dx$

Optimal. Leaf size=418

$$-\frac{6if^3\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^4\sqrt{a^2-b^2}}+\frac{6if^3\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^4\sqrt{a^2-b^2}}-\frac{6f^2(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}+\frac{6f^2(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}-\frac{3if(e+fx)^2}{bd^2}$$

```
[Out] -(f*x+e)^3/b/d/(a+b*sin(d*x+c))-3*I*f*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-
(a^2-b^2)^(1/2)))/b/d^2/(a^2-b^2)^(1/2)+3*I*f*(f*x+e)^2*ln(1-I*b*exp(I*(d*x
+c))/(a+(a^2-b^2)^(1/2)))/b/d^2/(a^2-b^2)^(1/2)-6*f^2*(f*x+e)*polylog(2,I*b
*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)^(1/2)+6*f^2*(f*x+e)*po
lylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^3/(a^2-b^2)^(1/2)-6*I*f
^3*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/d^4/(a^2-b^2)^(1/2)+
6*I*f^3*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/d^4/(a^2-b^2)^(
1/2)
```

Rubi [A] time = 0.89, antiderivative size = 418, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.269, Rules used = {4422, 3323, 2264, 2190, 2531, 2282, 6589}

$$-\frac{6f^2(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\sqrt{a^2-b^2}}+\frac{6f^2(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^3\sqrt{a^2-b^2}}-\frac{6if^3\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^4\sqrt{a^2-b^2}}+\frac{6if^3\text{Poly}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] ((-3*I)*f*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])
/(b*Sqrt[a^2 - b^2]*d^2) + ((3*I)*f*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)
))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^2) - (6*f^2*(e + f*x)*PolyL
og[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^3)
 + (6*f^2*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])]
)/(b*Sqrt[a^2 - b^2]*d^3) - ((6*I)*f^3*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a
- Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^4) + ((6*I)*f^3*PolyLog[3, (I*b*E
^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*Sqrt[a^2 - b^2]*d^4) - (e + f*x)
^3/(b*d*(a + b*Sin[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
```

```
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4422

```
Int[Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sin[(c
_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sin[c + d*x
])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^(m
- 1)*(a + b*Sin[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x
] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
```

```
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos(c+dx)}{(a+b\sin(c+dx))^2}\,dx = -\frac{(e+fx)^3}{bd(a+b\sin(c+dx))} + \frac{(3f)\int \frac{(e+fx)^2}{a+b\sin(c+dx)}\,dx}{bd}$$

$$= -\frac{(e+fx)^3}{bd(a+b\sin(c+dx))} + \frac{(6f)\int \frac{e^{i(c+dx)}(e+fx)^2}{ib+2ae^{i(c+dx)}-ibe^{2i(c+dx)}}\,dx}{bd}$$

$$= -\frac{(e+fx)^3}{bd(a+b\sin(c+dx))} - \frac{(6if)\int \frac{e^{i(c+dx)}(e+fx)^2}{2a-2\sqrt{a^2-b^2}-2ibe^{i(c+dx)}}\,dx}{\sqrt{a^2-b^2}\,d} + \frac{(6if)\int \frac{e^{i(c+dx)}(e+fx)^2}{2a+2\sqrt{a^2-b^2}-2ibe^{i(c\cdot}}}{\sqrt{a^2-b^2}\,d}$$

$$= -\frac{3if(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} + \frac{3if(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} - \frac{(e+f}{bd(a+b\sin}$$

$$= -\frac{3if(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} + \frac{3if(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} - \frac{6f^2(e+fx)}{b\sqrt{a^2}}$$

$$= -\frac{3if(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} + \frac{3if(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} - \frac{6f^2(e+fx)}{b\sqrt{a^2}}$$

$$= -\frac{3if(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} + \frac{3if(e+fx)^2\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\sqrt{a^2-b^2}\,d^2} - \frac{6f^2(e+fx)}{b\sqrt{a^2}}$$

Mathematica [A] time = 2.46, size = 446, normalized size = 1.07

$$-\frac{(e+fx)^3}{bd(a+b\sin(c+dx))} + \frac{3if\left(-i\left(d^2\left(2e^2\sqrt{b^2-a^2}\,\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right) + fx\sqrt{a^2-b^2}\,(2e+fx)\left(\log\left(1-\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)\right.\right.\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x])/(a + b*Sin[c + d*x])^2,x]
```

```
[Out] ((3*I)*f*(-2*Sqrt[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, (b*E^(I*(c + d*x)))/(
(-I)*a + Sqrt[-a^2 + b^2])] + 2*Sqrt[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, -(
(b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] - I*(d^2*(2*Sqrt[-a^2 + b^2]
*e^2*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + Sqrt[a^2 - b^2]*f*
```

```
x*(2*e + f*x)*(Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - L
og[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])])) + 2*Sqrt[a^2 - b^2]*
f^2*PolyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 2*Sqrt[a^
2 - b^2]*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))])))
/(b*Sqrt[-(a^2 - b^2)^2]*d^4) - (e + f*x)^3/(b*d*(a + b*Sin[c + d*x]))
```

fricas [C] time = 0.68, size = 2294, normalized size = 5.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] -1/2*(2*(a^2 - b^2)*d^3*f^3*x^3 + 6*(a^2 - b^2)*d^3*e*f^2*x^2 + 6*(a^2 - b^
2)*d^3*e^2*f*x + 2*(a^2 - b^2)*d^3*e^3 + (-6*I*a*b*d*f^3*x - 6*I*a*b*d*e*f^
2 + (-6*I*b^2*d*f^3*x - 6*I*b^2*d*e*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) -
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (6*I*a*b*d*f^3*x +
 6*I*a*b*d*e*f^2 + (6*I*b^2*d*f^3*x + 6*I*b^2*d*e*f^2)*sin(d*x + c))*sqrt(-
(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*c
os(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (6*I
*a*b*d*f^3*x + 6*I*a*b*d*e*f^2 + (6*I*b^2*d*f^3*x + 6*I*b^2*d*e*f^2)*sin(d*
x + c))*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*
x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b
)/b + 1) + (-6*I*a*b*d*f^3*x - 6*I*a*b*d*e*f^2 + (-6*I*b^2*d*f^3*x - 6*I*b^
2*d*e*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x
+ c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2
- b^2)/b^2) + 2*b)/b + 1) - 3*(a*b*d^2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f^
3 + (b^2*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^
2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 -
b^2)/b^2) + 2*I*a) - 3*(a*b*d^2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f^3 + (b^
2*d^2*e^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2
)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^
2) - 2*I*a) + 3*(a*b*d^2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f^3 + (b^2*d^2*e
^2*f - 2*b^2*c*d*e*f^2 + b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*
log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2
*I*a) + 3*(a*b*d^2*e^2*f - 2*a*b*c*d*e*f^2 + a*b*c^2*f^3 + (b^2*d^2*e^2*f -
 2*b^2*c*d*e*f^2 + b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(-2
*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)
- 3*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*x + 2*a*b*c*d*e*f^2 - a*b*c^2*f^3 +
(b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
 c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
) + 3*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*x + 2*a*b*c*d*e*f^2 - a*b*c^2*f^3
+ (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*sin
```

```
(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x
 + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)
/b) - 3*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*x + 2*a*b*c*d*e*f^2 - a*b*c^2*f^
3 + (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3)*s
in(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(
d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2
*b)/b) + 3*(a*b*d^2*f^3*x^2 + 2*a*b*d^2*e*f^2*x + 2*a*b*c*d*e*f^2 - a*b*c^2
*f^3 + (b^2*d^2*f^3*x^2 + 2*b^2*d^2*e*f^2*x + 2*b^2*c*d*e*f^2 - b^2*c^2*f^3
)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*s
in(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
+ 2*b)/b) + 6*(b^2*f^3*sin(d*x + c) + a*b*f^3)*sqrt(-(a^2 - b^2)/b^2)*polyl
og(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*
sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*(b^2*f^3*sin(d*x + c) + a*b*f^
3)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x
+ c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6
*(b^2*f^3*sin(d*x + c) + a*b*f^3)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2
*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2))/b) - 6*(b^2*f^3*sin(d*x + c) + a*b*f^3)*sqrt(-(a^
2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b
*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b))/((a^2*b^2 - b
^4)*d^4*sin(d*x + c) + (a^3*b - a*b^3)*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cos\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cos(d*x + c)/(b*sin(d*x + c) + a)^2, x)
```

maple [F] time = 2.61, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cos\left(dx+c\right)}{\left(a+b\sin\left(dx+c\right)\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c))^2,x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c))^2,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad **[F(-1)]** time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x))^2,x)
```

```
[Out] \text{Hanged}
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)/(a+b*sin(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.322 $\int \frac{(e+fx)\cos(c+dx)}{(a+b\sin(c+dx))^3} \, dx$

Optimal. Leaf size=116

$$\frac{af\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{bd^2\left(a^2-b^2\right)^{3/2}}+\frac{f\cos(c+dx)}{2d^2\left(a^2-b^2\right)(a+b\sin(c+dx))}-\frac{e+fx}{2bd(a+b\sin(c+dx))^2}$$

```
[Out] a*f*arctan((b+a*tan(1/2*d*x+1/2*c))/(a^2-b^2)^(1/2))/b/(a^2-b^2)^(3/2)/d^2+
1/2*(-f*x-e)/b/d/(a+b*sin(d*x+c))^2+1/2*f*cos(d*x+c)/(a^2-b^2)/d^2/(a+b*sin
(d*x+c))
```

Rubi [A] time = 0.10, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4422, 2664, 12, 2660, 618, 204}

$$\frac{af\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{bd^2\left(a^2-b^2\right)^{3/2}}+\frac{f\cos(c+dx)}{2d^2\left(a^2-b^2\right)(a+b\sin(c+dx))}-\frac{e+fx}{2bd(a+b\sin(c+dx))^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] (a*f*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/(b*(a^2 - b^2)^(3/2)
*d^2) - (e + f*x)/(2*b*d*(a + b*Sin[c + d*x])^2) + (f*Cos[c + d*x])/(2*(a^2
 - b^2)*d^2*(a + b*Sin[c + d*x]))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
```

```
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2664

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[
c + d*x]*(a + b*Sin[c + d*x])^(n + 1))/(d*(n + 1)*(a^2 - b^2)), x] + Dist[1
/((n + 1)*(a^2 - b^2)), Int[(a + b*Sin[c + d*x])^(n + 1)*Simp[a*(n + 1) - b
*(n + 2)*Sin[c + d*x], x], x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[a^2 - b^
2, 0] && LtQ[n, -1] && IntegerQ[2*n]
```

Rule 4422

```
Int[Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sin[(c
_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sin[c + d*x
])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^(m
- 1)*(a + b*Sin[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x
] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)\cos(c+dx)}{(a+b\sin(c+dx))^3}\,dx = -\frac{e+fx}{2bd(a+b\sin(c+dx))^2} + \frac{f\int \frac{1}{(a+b\sin(c+dx))^2}\,dx}{2bd}$$

$$= -\frac{e+fx}{2bd(a+b\sin(c+dx))^2} + \frac{f\cos(c+dx)}{2\left(a^2-b^2\right)d^2(a+b\sin(c+dx))} + \frac{f\int \frac{a}{a+b\sin(c+dx)}\,dx}{2b\left(a^2-b^2\right)d}$$

$$= -\frac{e+fx}{2bd(a+b\sin(c+dx))^2} + \frac{f\cos(c+dx)}{2\left(a^2-b^2\right)d^2(a+b\sin(c+dx))} + \frac{(af)\int \frac{1}{a+b\sin(c+dx)}\,dx}{2b\left(a^2-b^2\right)d}$$

$$= -\frac{e+fx}{2bd(a+b\sin(c+dx))^2} + \frac{f\cos(c+dx)}{2\left(a^2-b^2\right)d^2(a+b\sin(c+dx))} + \frac{(af)\,\text{Subst}\left(\int \frac{1}{a+2bx+\cdots}\right.}{b\left(a^2\cdots\right.}$$

$$= -\frac{e+fx}{2bd(a+b\sin(c+dx))^2} + \frac{f\cos(c+dx)}{2\left(a^2-b^2\right)d^2(a+b\sin(c+dx))} - \frac{(2af)\,\text{Subst}\left(\int \frac{\cdots}{-4\left(a^2\cdots\right.}\right.}{\cdots}$$

$$= \frac{af\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^2} - \frac{e+fx}{2bd(a+b\sin(c+dx))^2} + \frac{f\cos(c+dx)}{2\left(a^2-b^2\right)d^2(a+b\sin(c+d\cdots}$$

Mathematica [A] time = 1.17, size = 112, normalized size = 0.97

$$\frac{\frac{2af\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}} + \frac{\frac{f\cos(c+dx)(a+b\sin(c+dx))}{(a-b)(a+b)} - \frac{d(e+fx)}{b}}{(a+b\sin(c+dx))^2}}{2d^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)*Cos[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] ((2*a*f*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/(b*(a^2 - b^2)^(3
/2)) + (-((d*(e + f*x))/b) + (f*Cos[c + d*x]*(a + b*Sin[c + d*x]))/((a - b)
*(a + b)))/(a + b*Sin[c + d*x])^2)/(2*d^2)
```

fricas [B] time = 0.50, size = 625, normalized size = 5.39

$$\left[\frac{2\left(a^4-2a^2b^2+b^4\right)dfx - 2\left(a^2b^2-b^4\right)f\cos(dx+c)\sin(dx+c) + 2\left(a^4-2a^2b^2+b^4\right)de - 2\left(a^3b-ab^3\right)f\cos(\cdots}{4\left(\left(a^4b^3-2a^2b^5+b^7\right)d^2\cos(dx\cdots\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] [1/4*(2*(a^4 - 2*a^2*b^2 + b^4)*d*f*x - 2*(a^2*b^2 - b^4)*f*cos(d*x + c)*si
n(d*x + c) + 2*(a^4 - 2*a^2*b^2 + b^4)*d*e - 2*(a^3*b - a*b^3)*f*cos(d*x +
c) + (a*b^2*f*cos(d*x + c)^2 - 2*a^2*b*f*sin(d*x + c) - (a^3 + a*b^2)*f)*sq
rt(-a^2 + b^2)*log(-((2*a^2 - b^2)*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^
2 - b^2 - 2*(a*cos(d*x + c)*sin(d*x + c) + b*cos(d*x + c))*sqrt(-a^2 + b^2)
)/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2)))/((a^4*b^3 - 2*a^2
*b^5 + b^7)*d^2*cos(d*x + c)^2 - 2*(a^5*b^2 - 2*a^3*b^4 + a*b^6)*d^2*sin(d*
x + c) - (a^6*b - a^4*b^3 - a^2*b^5 + b^7)*d^2), 1/2*((a^4 - 2*a^2*b^2 + b^
4)*d*f*x - (a^2*b^2 - b^4)*f*cos(d*x + c)*sin(d*x + c) + (a^4 - 2*a^2*b^2 +
 b^4)*d*e - (a^3*b - a*b^3)*f*cos(d*x + c) - (a*b^2*f*cos(d*x + c)^2 - 2*a^
2*b*f*sin(d*x + c) - (a^3 + a*b^2)*f)*sqrt(a^2 - b^2)*arctan(-(a*sin(d*x +
c) + b)/(sqrt(a^2 - b^2)*cos(d*x + c))))/((a^4*b^3 - 2*a^2*b^5 + b^7)*d^2*c
os(d*x + c)^2 - 2*(a^5*b^2 - 2*a^3*b^4 + a*b^6)*d^2*sin(d*x + c) - (a^6*b -
 a^4*b^3 - a^2*b^5 + b^7)*d^2)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)\cos\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)*cos(d*x + c)/(b*sin(d*x + c) + a)^3, x)
```

maple [C] time = 2.60, size = 349, normalized size = 3.01

$$\frac{2a^2dfx\,e^{2i(dx+c)}-2b^2dfx\,e^{2i(dx+c)}+2ia^2f\,e^{2i(dx+c)}+ib^2f\,e^{2i(dx+c)}+2a^2de\,e^{2i(dx+c)}+baf\,e^{3i(dx+c)}-2b^2de\,e^{2i(dx+}}{\left(b\,e^{2i(dx+c)}-b+2ia\,e^{i(dx+c)}\right)^2d^2\left(a^2-b^2\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c))^3,x)
```

```
[Out] (2*a^2*d*f*x*exp(2*I*(d*x+c))-2*b^2*d*f*x*exp(2*I*(d*x+c))+2*I*a^2*f*exp(2*
I*(d*x+c))+I*b^2*f*exp(2*I*(d*x+c))+2*a^2*d*e*exp(2*I*(d*x+c))+b*a*f*exp(3*
I*(d*x+c))-2*b^2*d*e*exp(2*I*(d*x+c))-I*b^2*f-3*a*b*f*exp(I*(d*x+c)))/(b*ex
p(2*I*(d*x+c))-b+2*I*a*exp(I*(d*x+c)))^2/d^2/(a^2-b^2)/b-1/2/(-a^2+b^2)^(1/
2)*f*a/(a+b)/(a-b)/d^2/b*ln(exp(I*(d*x+c))+(I*a*(-a^2+b^2)^(1/2)-a^2+b^2)/(
```

```
-a^2+b^2)^(1/2)/b)+1/2/(-a^2+b^2)^(1/2)*f*a/(a+b)/(a-b)/d^2/b*ln(exp(I*(d*x
+c))+(I*a*(-a^2+b^2)^(1/2)+a^2-b^2)/(-a^2+b^2)^(1/2)/b)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.01

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x))/(a + b*sin(c + d*x))^3,x)
```

```
[Out] \text{Hanged}
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)/(a+b*sin(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.323 $\int \frac{(e+fx)^2\cos(c+dx)}{(a+b\sin(c+dx))^3}\,dx$

Optimal. Leaf size=357

$$-\frac{af^2\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\left(a^2-b^2\right)^{3/2}}+\frac{af^2\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^3\left(a^2-b^2\right)^{3/2}}-\frac{f^2\log(a+b\sin(c+dx))}{bd^3\left(a^2-b^2\right)}-\frac{iaf(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\left(a^2-b^2\right)^{3/2}}+\frac{iaf(e+f}{bd}$$

```
[Out] -f^2*ln(a+b*sin(d*x+c))/b/(a^2-b^2)/d^3-I*a*f*(f*x+e)*ln(1-I*b*exp(I*(d*x+c
))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2+I*a*f*(f*x+e)*ln(1-I*b*exp(I*
(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2-a*f^2*polylog(2,I*b*exp
(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^3+a*f^2*polylog(2,I*b*
exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^3-1/2*(f*x+e)^2/b/d
/(a+b*sin(d*x+c))^2+f*(f*x+e)*cos(d*x+c)/(a^2-b^2)/d^2/(a+b*sin(d*x+c))
```

Rubi [A] time = 0.61, antiderivative size = 357, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.346, Rules used = {4422, 3324, 3323, 2264, 2190, 2279, 2391, 2668, 31}

$$-\frac{af^2\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\left(a^2-b^2\right)^{3/2}}+\frac{af^2\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^3\left(a^2-b^2\right)^{3/2}}-\frac{iaf(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^2\left(a^2-b^2\right)^{3/2}}+\frac{iaf(e+fx)\log\left(1-\right.}{bd^2\left(a^2-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] ((-I)*a*f*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(
b*(a^2 - b^2)^(3/2)*d^2) + (I*a*f*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(
a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^2) - (f^2*Log[a + b*Sin[c + d
*x]])/(b*(a^2 - b^2)*d^3) - (a*f^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sq
rt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^3) + (a*f^2*PolyLog[2, (I*b*E^(I*(c
 + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^3) - (e + f*x)^2/(
2*b*d*(a + b*Sin[c + d*x])^2) + (f*(e + f*x)*Cos[c + d*x])/((a^2 - b^2)*d^2
*(a + b*Sin[c + d*x]))
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2668

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_.)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m
_.), x_Symbol] :> Dist[1/(b^p*f), Subst[Int[(a + x)^m*(b^2 - x^2)^((p - 1)/
2), x], x, b*Sin[e + f*x]], x] /; FreeQ[{a, b, e, f, m}, x] && IntegerQ[(p
- 1)/2] && NeQ[a^2 - b^2, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
```

```
2, 0] && IGtQ[m, 0]
```

Rule 4422

```
Int[Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sin[(c
_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sin[c + d*x
])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^(m
- 1)*(a + b*Sin[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x
] && IGtQ[m, 0] && NeQ[n, -1]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos(c+dx)}{(a+b\sin(c+dx))^3}\,dx = -\frac{(e+fx)^2}{2bd(a+b\sin(c+dx))^2}+\frac{f\int \frac{e+fx}{(a+b\sin(c+dx))^2}\,dx}{bd}$$

$$= -\frac{(e+fx)^2}{2bd(a+b\sin(c+dx))^2}+\frac{f(e+fx)\cos(c+dx)}{\left(a^2-b^2\right)d^2(a+b\sin(c+dx))}+\frac{(af)\int \frac{e+fx}{a+b\sin(c+dx)}\,d}{b\left(a^2-b^2\right)d}$$

$$= -\frac{(e+fx)^2}{2bd(a+b\sin(c+dx))^2}+\frac{f(e+fx)\cos(c+dx)}{\left(a^2-b^2\right)d^2(a+b\sin(c+dx))}+\frac{(2af)\int \frac{e^{i(c+dx)}(e+}{ib+2ae^{i(c+dx)}-i}}{b\left(a^2-b^2\right)}$$

$$= -\frac{f^2\log(a+b\sin(c+dx))}{b\left(a^2-b^2\right)d^3}-\frac{(e+fx)^2}{2bd(a+b\sin(c+dx))^2}+\frac{f(e+fx)\cos(c+dx}{\left(a^2-b^2\right)d^2(a+b\sin(c+}$$

$$= -\frac{iaf(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^2}+\frac{iaf(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^2}-\frac{f^2\log(a+b}{b\left(a^2-\right.}$$

$$= -\frac{iaf(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^2}+\frac{iaf(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^2}-\frac{f^2\log(a+b}{b\left(a^2-\right.}$$

$$= -\frac{iaf(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^2}+\frac{iaf(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)^{3/2}d^2}-\frac{f^2\log(a+b}{b\left(a^2-\right.}$$

Mathematica [B] time = 15.34, size = 1104, normalized size = 3.09

$$\frac{x\cot(c)f^2}{b\left(b^2-a^2\right)d^2}-\frac{x\csc\left(\frac{c}{2}\right)\sec\left(\frac{c}{2}\right)\left(\cos\left(\frac{c}{2}\right)-\sin\left(\frac{c}{2}\right)\right)\left(\cos\left(\frac{c}{2}\right)+\sin\left(\frac{c}{2}\right)\right)f^2}{2b(b-a)(a+b)d^2}-\frac{ie^{ic}\left(4e^{ic}fx-\frac{2iae^{2ic}f\log\left(\frac{e^{i(2c+dx)}b}{iae^{ic}-\sqrt{\left(b^2-a^2\right)e^{2ic}}}\right.}{\sqrt{\left(b^2-a^2\right)e^{2ic}}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] (f^2*x*Cot[c])/(b*(-a^2 + b^2)*d^2) - ((I/2)*E^(I*c)*f*(4*E^(I*c)*f*x + ((4
*I)*a*e*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]])/(Sqrt[a^2 - b^2]
*E^(I*c)) - ((4*I)*a*e*E^(I*c)*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 -
b^2]])/Sqrt[a^2 - b^2] + (2*f*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I
)*(c + d*x))))])/(d*E^(I*c)) - (2*E^(I*c)*f*ArcTan[(2*a*E^(I*(c + d*x)))/(b
*(-1 + E^((2*I)*(c + d*x))))])/d - (I*f*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2
*(-1 + E^((2*I)*(c + d*x)))^2])/(d*E^(I*c)) + (I*E^(I*c)*f*Log[4*a^2*E^((2*
I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2])/d + ((2*I)*a*f*x*Log[1 +
 (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])])/Sqr
t[(-a^2 + b^2)*E^((2*I)*c)] - ((2*I)*a*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c
 + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])])/Sqrt[(-a^2 + b^2
)*E^((2*I)*c)] - ((2*I)*a*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) +
Sqrt[(-a^2 + b^2)*E^((2*I)*c)])])/Sqrt[(-a^2 + b^2)*E^((2*I)*c)] + ((2*I)*a
*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 +
b^2)*E^((2*I)*c)])])/Sqrt[(-a^2 + b^2)*E^((2*I)*c)] - (2*a*(-1 + E^((2*I)*c
))*f*PolyLog[2, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^
((2*I)*c)])])/(d*Sqrt[(-a^2 + b^2)*E^((2*I)*c)]) + (2*a*(-1 + E^((2*I)*c))*
f*PolyLog[2, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2
*I)*c)]))])/(d*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])))/(b*(-a^2 + b^2)*d^2*(-1 +
E^((2*I)*c))) - (f^2*x*Csc[c/2]*Sec[c/2]*(Cos[c/2] - Sin[c/2])*(Cos[c/2] +
Sin[c/2]))/(2*b*(-a + b)*(a + b)*d^2) - (e + f*x)^2/(2*b*d*(a + b*Sin[c + d
*x])^2) + (Csc[c/2]*Sec[c/2]*(-(a*e*f*Cos[c]) - a*f^2*x*Cos[c] - b*e*f*Sin[
d*x] - b*f^2*x*Sin[d*x]))/(2*(a - b)*b*(a + b)*d^2*(a + b*Sin[c + d*x]))
```

fricas [B] time = 1.80, size = 2383, normalized size = 6.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/2*((a^4 - 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^4 - 2*a^2*b^2 + b^4)*d^2*e*
f*x + (a^4 - 2*a^2*b^2 + b^4)*d^2*e^2 - 2*((a^2*b^2 - b^4)*d*f^2*x + (a^2*b
```

```
^2 - b^4)*d*e*f)*cos(d*x + c)*sin(d*x + c) - (-I*a*b^3*f^2*cos(d*x + c)^2 +
 2*I*a^2*b^2*f^2*sin(d*x + c) + I*(a^3*b + a*b^3)*f^2)*sqrt(-(a^2 - b^2)/b^
2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) -
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (I*a*b^3*f^2*cos(d
*x + c)^2 - 2*I*a^2*b^2*f^2*sin(d*x + c) - I*(a^3*b + a*b^3)*f^2)*sqrt(-(a^
2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(
d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - (I*a*b^
3*f^2*cos(d*x + c)^2 - 2*I*a^2*b^2*f^2*sin(d*x + c) - I*(a^3*b + a*b^3)*f^2
)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c)
 + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b +
1) - (-I*a*b^3*f^2*cos(d*x + c)^2 + 2*I*a^2*b^2*f^2*sin(d*x + c) + I*(a^3*b
 + a*b^3)*f^2)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a
*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
) + 2*b)/b + 1) - ((a^3*b + a*b^3)*d*f^2*x + (a^3*b + a*b^3)*c*f^2 - (a*b^3
*d*f^2*x + a*b^3*c*f^2)*cos(d*x + c)^2 + 2*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2
)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*si
n(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) +
 2*b)/b) + ((a^3*b + a*b^3)*d*f^2*x + (a^3*b + a*b^3)*c*f^2 - (a*b^3*d*f^2*
x + a*b^3*c*f^2)*cos(d*x + c)^2 + 2*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
 c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
) - ((a^3*b + a*b^3)*d*f^2*x + (a^3*b + a*b^3)*c*f^2 - (a*b^3*d*f^2*x + a*b
^3*c*f^2)*cos(d*x + c)^2 + 2*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) +
2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + ((
a^3*b + a*b^3)*d*f^2*x + (a^3*b + a*b^3)*c*f^2 - (a*b^3*d*f^2*x + a*b^3*c*f
^2)*cos(d*x + c)^2 + 2*(a^2*b^2*d*f^2*x + a^2*b^2*c*f^2)*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*c
os(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*((a^3*
b - a*b^3)*d*f^2*x + (a^3*b - a*b^3)*d*e*f)*cos(d*x + c) - ((a^2*b^2 - b^4)
*f^2*cos(d*x + c)^2 - 2*(a^3*b - a*b^3)*f^2*sin(d*x + c) - (a^4 - b^4)*f^2
+ ((a^3*b + a*b^3)*d*e*f - (a^3*b + a*b^3)*c*f^2 - (a*b^3*d*e*f - a*b^3*c*f
^2)*cos(d*x + c)^2 + 2*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*sin(d*x + c))*sqrt(-
(a^2 - b^2)/b^2))*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^
2 - b^2)/b^2) + 2*I*a) - ((a^2*b^2 - b^4)*f^2*cos(d*x + c)^2 - 2*(a^3*b - a
*b^3)*f^2*sin(d*x + c) - (a^4 - b^4)*f^2 + ((a^3*b + a*b^3)*d*e*f - (a^3*b
+ a*b^3)*c*f^2 - (a*b^3*d*e*f - a*b^3*c*f^2)*cos(d*x + c)^2 + 2*(a^2*b^2*d*
e*f - a^2*b^2*c*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(d*x
+ c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - ((a^2*b^2
 - b^4)*f^2*cos(d*x + c)^2 - 2*(a^3*b - a*b^3)*f^2*sin(d*x + c) - (a^4 - b^
4)*f^2 - ((a^3*b + a*b^3)*d*e*f - (a^3*b + a*b^3)*c*f^2 - (a*b^3*d*e*f - a*
b^3*c*f^2)*cos(d*x + c)^2 + 2*(a^2*b^2*d*e*f - a^2*b^2*c*f^2)*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*s
qrt(-(a^2 - b^2)/b^2) + 2*I*a) - ((a^2*b^2 - b^4)*f^2*cos(d*x + c)^2 - 2*(a
^3*b - a*b^3)*f^2*sin(d*x + c) - (a^4 - b^4)*f^2 - ((a^3*b + a*b^3)*d*e*f -
```

```
(a^3*b + a*b^3)*c*f^2 - (a*b^3*d*e*f - a*b^3*c*f^2)*cos(d*x + c)^2 + 2*(a^
2*b^2*d*e*f - a^2*b^2*c*f^2)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b
*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a))/(
(a^4*b^3 - 2*a^2*b^5 + b^7)*d^3*cos(d*x + c)^2 - 2*(a^5*b^2 - 2*a^3*b^4 + a
*b^6)*d^3*sin(d*x + c) - (a^6*b - a^4*b^3 - a^2*b^5 + b^7)*d^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\cos\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^2*cos(d*x + c)/(b*sin(d*x + c) + a)^3, x)
```

maple [B] time = 2.94, size = 946, normalized size = 2.65

$$\frac{2a^{2}d f^{2}x^{2}\mathrm{e}^{2i(dx+c)}-2b^{2}d f^{2}x^{2}\mathrm{e}^{2i(dx+c)}+4ia^{2}ef\,\mathrm{e}^{2i(dx+c)}+4ia^{2}f^{2}x\,\mathrm{e}^{2i(dx+c)}+4a^{2}defx\,\mathrm{e}^{2i(dx+c)}+2ba\,f^{2}x\,\mathrm{e}^{3i(dx+c)}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c))^3,x)
```

```
[Out] 2*(a^2*d*f^2*x^2*exp(2*I*(d*x+c))-b^2*d*f^2*x^2*exp(2*I*(d*x+c))+2*I*a^2*e*
f*exp(2*I*(d*x+c))+2*I*a^2*f^2*x*exp(2*I*(d*x+c))+2*a^2*d*e*f*x*exp(2*I*(d*
x+c))+b*a*f^2*x*exp(3*I*(d*x+c))-2*b^2*d*e*f*x*exp(2*I*(d*x+c))-I*b^2*e*f+I
*b^2*f^2*x*exp(2*I*(d*x+c))+a^2*d*e^2*exp(2*I*(d*x+c))+b*a*e*f*exp(3*I*(d*x
+c))-b^2*d*e^2*exp(2*I*(d*x+c))-I*b^2*f^2*x-3*a*b*f^2*x*exp(I*(d*x+c))+I*b^
2*e*f*exp(2*I*(d*x+c))-3*a*b*e*f*exp(I*(d*x+c)))/(b*exp(2*I*(d*x+c))-b+2*I*
a*exp(I*(d*x+c)))^2/d^2/(a^2-b^2)/b+1/b/(-a^2+b^2)/d^3*f^2*ln(I*b*exp(2*I*(
d*x+c))-2*a*exp(I*(d*x+c))-I*b)-2/b/(-a^2+b^2)/d^3*f^2*ln(exp(I*(d*x+c)))-1
/b/(-a^2+b^2)^(3/2)/d^2*f^2*a*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I
*a-(-a^2+b^2)^(1/2)))*x-1/b/(-a^2+b^2)^(3/2)/d^3*f^2*a*ln((I*a+b*exp(I*(d*x
+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c+2*I/b/(-a^2+b^2)^(3/2)/d^3
*f^2*a*c*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))-2*I/b/(-a^
2+b^2)^(3/2)/d^2*f*a*e*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/
2))-I/b/(-a^2+b^2)^(3/2)/d^3*f^2*a*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(
1/2))/(I*a+(-a^2+b^2)^(1/2)))+1/b/(-a^2+b^2)^(3/2)/d^2*f^2*a*ln((I*a+b*exp(
I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x+1/b/(-a^2+b^2)^(3/2)
/d^3*f^2*a*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)
```

```
))*c+I/b/(-a^2+b^2)^(3/2)/d^3*f^2*a*dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^
(1/2))/(I*a-(-a^2+b^2)^(1/2)))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x))^3,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)/(a+b*sin(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.324 $\int \frac{(e+fx)^3\cos(c+dx)}{(a+b\sin(c+dx))^3}\,dx$

Optimal. Leaf size=753

$$\frac{3if^3\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^4\left(a^2-b^2\right)}+\frac{3if^3\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^4\left(a^2-b^2\right)}-\frac{3iaf^3\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^4\left(a^2-b^2\right)^{3/2}}+\frac{3iaf^3\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{bd^4\left(a^2-b^2\right)^{3/2}}-\frac{3af^2(e+fx)\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\left(a^2-b^2\right)^{3/2}}$$

```
[Out] 3/2*I*f*(f*x+e)^2/b/(a^2-b^2)/d^2-3*f^2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-
(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^3-3/2*I*a*f*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c
))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2-3*f^2*(f*x+e)*ln(1-I*b*exp(I*
(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^3+3/2*I*a*f*(f*x+e)^2*ln(1-I*b*
exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^2+3*I*f^3*polylog(2
,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^4-3*a*f^2*(f*x+e)*po
lylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/2)/d^3+3*I*f
^3*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)/d^4+3*a*f^
2*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b/(a^2-b^2)^(3/
2)/d^3-3*I*a*f^3*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/b/(a^2-b
^2)^(3/2)/d^4+3*I*a*f^3*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/b
/(a^2-b^2)^(3/2)/d^4-1/2*(f*x+e)^3/b/d/(a+b*sin(d*x+c))^2+3/2*f*(f*x+e)^2*c
os(d*x+c)/(a^2-b^2)/d^2/(a+b*sin(d*x+c))
```

Rubi [A] time = 1.27, antiderivative size = 753, normalized size of antiderivative = 1.00, number of steps used = 19, number of rules used = 11, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.423, Rules used = {4422, 3324, 3323, 2264, 2190, 2531, 2282, 6589, 4519, 2279, 2391}

$$-\frac{3af^2(e+fx)\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^3\left(a^2-b^2\right)^{3/2}}+\frac{3af^2(e+fx)\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{bd^3\left(a^2-b^2\right)^{3/2}}+\frac{3if^3\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{bd^4\left(a^2-b^2\right)}+\frac{3if^3\mathrm{Po}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] (((3*I)/2)*f*(e + f*x)^2)/(b*(a^2 - b^2)*d^2) - (3*f^2*(e + f*x)*Log[1 - (I
*b*E^(I*(c + d*x))))/(a - Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^3) - (((3*I)/2
)*a*f*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*
(a^2 - b^2)^(3/2)*d^2) - (3*f^2*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a
+ Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^3) + (((3*I)/2)*a*f*(e + f*x)^2*Log[1
 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^2)
+ ((3*I)*f^3*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(b*(a
^2 - b^2)*d^4) - (3*a*f^2*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - S
```

```
qrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^3) + ((3*I)*f^3*PolyLog[2, (I*b*E^
(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)*d^4) + (3*a*f^2*(e +
f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2
)^(3/2)*d^3) - ((3*I)*a*f^3*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2
- b^2])])/(b*(a^2 - b^2)^(3/2)*d^4) + ((3*I)*a*f^3*PolyLog[3, (I*b*E^(I*(c
+ d*x)))/(a + Sqrt[a^2 - b^2])])/(b*(a^2 - b^2)^(3/2)*d^4) - (e + f*x)^3/(2
*b*d*(a + b*Sin[c + d*x])^2) + (3*f*(e + f*x)^2*Cos[c + d*x])/(2*(a^2 - b^2
)*d^2*(a + b*Sin[c + d*x]))
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3324

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^2, x_
Symbol] :> Simp[(b*(c + d*x)^m*Cos[e + f*x])/(f*(a^2 - b^2)*(a + b*Sin[e +
f*x])), x] + (Dist[a/(a^2 - b^2), Int[(c + d*x)^m/(a + b*Sin[e + f*x]), x],
 x] - Dist[(b*d*m)/(f*(a^2 - b^2)), Int[((c + d*x)^(m - 1)*Cos[e + f*x])/(a
 + b*Sin[e + f*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[a^2 - b^
2, 0] && IGtQ[m, 0]
```

Rule 4422

```
Int[Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.)*((a_) + (b_.)*Sin[(c
_.) + (d_.)*(x_)])^(n_.), x_Symbol] :> Simp[((e + f*x)^m*(a + b*Sin[c + d*x
])^(n + 1))/(b*d*(n + 1)), x] - Dist[(f*m)/(b*d*(n + 1)), Int[(e + f*x)^(m
- 1)*(a + b*Sin[c + d*x])^(n + 1), x], x] /; FreeQ[{a, b, c, d, e, f, n}, x
] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos(c+dx)}{(a+b\sin(c+dx))^3}\,dx = -\frac{(e+fx)^3}{2bd(a+b\sin(c+dx))^2} + \frac{(3f)\int \frac{(e+fx)^2}{(a+b\sin(c+dx))^2}\,dx}{2bd}$$

$$= -\frac{(e+fx)^3}{2bd(a+b\sin(c+dx))^2} + \frac{3f(e+fx)^2\cos(c+dx)}{2\left(a^2-b^2\right)d^2(a+b\sin(c+dx))} + \frac{(3af)\int \frac{(e+fx)^2}{a+b\sin(c+dx)}}{2b\left(a^2-b^2\right)d}$$

$$= \frac{3if(e+fx)^2}{2b\left(a^2-b^2\right)d^2} - \frac{(e+fx)^3}{2bd(a+b\sin(c+dx))^2} + \frac{3f(e+fx)^2\cos(c+dx)}{2\left(a^2-b^2\right)d^2(a+b\sin(c+dx))} + \frac{(3}{}$$

$$= \frac{3if(e+fx)^2}{2b\left(a^2-b^2\right)d^2} - \frac{3f^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^3} - \frac{3f^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^3}$$

$$= \frac{3if(e+fx)^2}{2b\left(a^2-b^2\right)d^2} - \frac{3f^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^3} - \frac{3iaf(e+fx)^2\log\left(1-\frac{ibe^{i(c+d}}{a-\sqrt{a^2-}}\right.}{2b\left(a^2-b^2\right)^{3/2}d^2}$$

$$= \frac{3if(e+fx)^2}{2b\left(a^2-b^2\right)d^2} - \frac{3f^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^3} - \frac{3iaf(e+fx)^2\log\left(1-\frac{ibe^{i(c+d}}{a-\sqrt{a^2-}}\right.}{2b\left(a^2-b^2\right)^{3/2}d^2}$$

$$= \frac{3if(e+fx)^2}{2b\left(a^2-b^2\right)d^2} - \frac{3f^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^3} - \frac{3iaf(e+fx)^2\log\left(1-\frac{ibe^{i(c+d}}{a-\sqrt{a^2-}}\right.}{2b\left(a^2-b^2\right)^{3/2}d^2}$$

$$= \frac{3if(e+fx)^2}{2b\left(a^2-b^2\right)d^2} - \frac{3f^2(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{b\left(a^2-b^2\right)d^3} - \frac{3iaf(e+fx)^2\log\left(1-\frac{ibe^{i(c+d}}{a-\sqrt{a^2-}}\right.}{2b\left(a^2-b^2\right)^{3/2}d^2}$$

Mathematica [B] time = 20.02, size = 2311, normalized size = 3.07

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x])/(a + b*Sin[c + d*x])^3,x]
```

```
[Out] ((-3*I)*E^(I*c)*f*(2*e*E^(I*c)*f*x + E^(I*c)*f^2*x^2 + (I*a*e^2*ArcTan[(I*a
 + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]])/(Sqrt[a^2 - b^2]*E^(I*c)) - (I*a*e^
```

```
2*E^(I*c)*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2
] + (2*a*e*f*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]])/(Sqrt[a^2 -
 b^2]*d*E^(I*c)) + (e*f*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c +
 d*x))))])/(d*E^(I*c)) - (e*E^(I*c)*f*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 +
 E^((2*I)*(c + d*x))))])/d + ((2*I)*a*e*f*ArcTanh[(-a + I*b*E^(I*(c + d*x))
)/Sqrt[a^2 - b^2]])/(Sqrt[a^2 - b^2]*d*E^(I*c)) - ((I/2)*e*f*Log[4*a^2*E^((
2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2])/(d*E^(I*c)) + ((I/2)*e
*E^(I*c)*f*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2
])/d + (I*a*e*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 +
 b^2)*E^((2*I)*c)])])/Sqrt[(-a^2 + b^2)*E^((2*I)*c)] - (I*a*e*E^((2*I)*c)*f
*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*
c)])])/Sqrt[(-a^2 + b^2)*E^((2*I)*c)] - (I*f^2*x*Log[1 + (b*E^(I*(2*c + d*x
)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])])/(d*E^(I*c)) + (I*E^(I*
c)*f^2*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^(
(2*I)*c)])])/d + ((I/2)*a*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c
) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])])/Sqrt[(-a^2 + b^2)*E^((2*I)*c)] - ((I/
2)*a*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[
(-a^2 + b^2)*E^((2*I)*c)])])/Sqrt[(-a^2 + b^2)*E^((2*I)*c)] - (I*a*e*f*x*Lo
g[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])]
)/Sqrt[(-a^2 + b^2)*E^((2*I)*c)] + (I*a*e*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(
2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])])/Sqrt[(-a^2 +
b^2)*E^((2*I)*c)] - (I*f^2*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + S
qrt[(-a^2 + b^2)*E^((2*I)*c)])])/(d*E^(I*c)) + (I*E^(I*c)*f^2*x*Log[1 + (b*
E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])])/d - ((I
/2)*a*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2
)*E^((2*I)*c)])])/Sqrt[(-a^2 + b^2)*E^((2*I)*c)] + ((I/2)*a*E^((2*I)*c)*f^2
*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I
)*c)])])/Sqrt[(-a^2 + b^2)*E^((2*I)*c)] - ((-1 + E^((2*I)*c))*f*(-(Sqrt[(-a
^2 + b^2)*E^((2*I)*c)]*f) + a*d*E^(I*c)*(e + f*x))*PolyLog[2, (I*b*E^(I*(2*
c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])])/(d^2*E^(I*c)*Sq
rt[(-a^2 + b^2)*E^((2*I)*c)]) + ((-1 + E^((2*I)*c))*f*(Sqrt[(-a^2 + b^2)*E^
((2*I)*c)]*f + a*d*E^(I*c)*(e + f*x))*PolyLog[2, -((b*E^(I*(2*c + d*x)))/(I
*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))])/(d^2*E^(I*c)*Sqrt[(-a^2 + b
^2)*E^((2*I)*c)]) + (I*a*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c)
+ I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])])/(d^2*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])
- (I*a*E^((2*I)*c)*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sq
rt[(-a^2 + b^2)*E^((2*I)*c)])])/(d^2*Sqrt[(-a^2 + b^2)*E^((2*I)*c)]) - (I*a
*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^
((2*I)*c)]))])/(d^2*Sqrt[(-a^2 + b^2)*E^((2*I)*c)]) + (I*a*E^((2*I)*c)*f^2*
PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I
)*c)]))])/(d^2*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])))/(b*(-a^2 + b^2)*d^2*(-1 +
E^((2*I)*c))) - (e + f*x)^3/(2*b*d*(a + b*Sin[c + d*x])^2) - (3*Csc[c/2]*Se
c[c/2]*(a*e^2*f*Cos[c] + 2*a*e*f^2*x*Cos[c] + a*f^3*x^2*Cos[c] + b*e^2*f*Si
n[d*x] + 2*b*e*f^2*x*Sin[d*x] + b*f^3*x^2*Sin[d*x]))/(4*(a - b)*b*(a + b)*d
^2*(a + b*Sin[c + d*x]))
```

fricas [C] time = 1.02, size = 4931, normalized size = 6.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] 1/8*(4*(a^4 - 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 12*(a^4 - 2*a^2*b^2 + b^4)*d^3
*e*f^2*x^2 + 12*(a^4 - 2*a^2*b^2 + b^4)*d^3*e^2*f*x + 4*(a^4 - 2*a^2*b^2 +
b^4)*d^3*e^3 - 12*((a^2*b^2 - b^4)*d^2*f^3*x^2 + 2*(a^2*b^2 - b^4)*d^2*e*f^
2*x + (a^2*b^2 - b^4)*d^2*e^2*f)*cos(d*x + c)*sin(d*x + c) - 12*(a*b^3*f^3*
cos(d*x + c)^2 - 2*a^2*b^2*f^3*sin(d*x + c) - (a^3*b + a*b^3)*f^3)*sqrt(-(a
^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b
*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(a*b^3*f^
3*cos(d*x + c)^2 - 2*a^2*b^2*f^3*sin(d*x + c) - (a^3*b + a*b^3)*f^3)*sqrt(-
(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*
(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*(a*b^3*
f^3*cos(d*x + c)^2 - 2*a^2*b^2*f^3*sin(d*x + c) - (a^3*b + a*b^3)*f^3)*sqrt
(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) +
 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(a*b
^3*f^3*cos(d*x + c)^2 - 2*a^2*b^2*f^3*sin(d*x + c) - (a^3*b + a*b^3)*f^3)*s
qrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c
) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*(
(a^3*b - a*b^3)*d^2*f^3*x^2 + 2*(a^3*b - a*b^3)*d^2*e*f^2*x + (a^3*b - a*b^
3)*d^2*e^2*f)*cos(d*x + c) - (12*I*(a^2*b^2 - b^4)*f^3*cos(d*x + c)^2 - 24*
I*(a^3*b - a*b^3)*f^3*sin(d*x + c) - 12*I*(a^4 - b^4)*f^3 + 2*(6*I*(a^3*b +
 a*b^3)*d*f^3*x + 6*I*(a^3*b + a*b^3)*d*e*f^2 + (-6*I*a*b^3*d*f^3*x - 6*I*a
*b^3*d*e*f^2)*cos(d*x + c)^2 + (12*I*a^2*b^2*d*f^3*x + 12*I*a^2*b^2*d*e*f^2
)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*
a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2) + 2*b)/b + 1) - (12*I*(a^2*b^2 - b^4)*f^3*cos(d*x + c)^2 - 24*I*(a^3*b -
 a*b^3)*f^3*sin(d*x + c) - 12*I*(a^4 - b^4)*f^3 + 2*(-6*I*(a^3*b + a*b^3)*d
*f^3*x - 6*I*(a^3*b + a*b^3)*d*e*f^2 + (6*I*a*b^3*d*f^3*x + 6*I*a*b^3*d*e*f
^2)*cos(d*x + c)^2 + (-12*I*a^2*b^2*d*f^3*x - 12*I*a^2*b^2*d*e*f^2)*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x
 + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)
/b + 1) - (-12*I*(a^2*b^2 - b^4)*f^3*cos(d*x + c)^2 + 24*I*(a^3*b - a*b^3)*
f^3*sin(d*x + c) + 12*I*(a^4 - b^4)*f^3 + 2*(-6*I*(a^3*b + a*b^3)*d*f^3*x -
 6*I*(a^3*b + a*b^3)*d*e*f^2 + (6*I*a*b^3*d*f^3*x + 6*I*a*b^3*d*e*f^2)*cos(
d*x + c)^2 + (-12*I*a^2*b^2*d*f^3*x - 12*I*a^2*b^2*d*e*f^2)*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2))*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) +
 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)
 - (-12*I*(a^2*b^2 - b^4)*f^3*cos(d*x + c)^2 + 24*I*(a^3*b - a*b^3)*f^3*sin
(d*x + c) + 12*I*(a^4 - b^4)*f^3 + 2*(6*I*(a^3*b + a*b^3)*d*f^3*x + 6*I*(a^
```

```
3*b + a*b^3)*d*e*f^2 + (-6*I*a*b^3*d*f^3*x - 6*I*a*b^3*d*e*f^2)*cos(d*x + c
)^2 + (12*I*a^2*b^2*d*f^3*x + 12*I*a^2*b^2*d*e*f^2)*sin(d*x + c))*sqrt(-(a^
2 - b^2)/b^2))*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 6*(2*
(a^4 - b^4)*d*e*f^2 - 2*(a^4 - b^4)*c*f^3 - 2*((a^2*b^2 - b^4)*d*e*f^2 - (a
^2*b^2 - b^4)*c*f^3)*cos(d*x + c)^2 + 4*((a^3*b - a*b^3)*d*e*f^2 - (a^3*b -
 a*b^3)*c*f^3)*sin(d*x + c) - ((a^3*b + a*b^3)*d^2*e^2*f - 2*(a^3*b + a*b^3
)*c*d*e*f^2 + (a^3*b + a*b^3)*c^2*f^3 - (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^
2 + a*b^3*c^2*f^3)*cos(d*x + c)^2 + 2*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*
f^2 + a^2*b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(d*
x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 6*(2*(a
^4 - b^4)*d*e*f^2 - 2*(a^4 - b^4)*c*f^3 - 2*((a^2*b^2 - b^4)*d*e*f^2 - (a^2
*b^2 - b^4)*c*f^3)*cos(d*x + c)^2 + 4*((a^3*b - a*b^3)*d*e*f^2 - (a^3*b - a
*b^3)*c*f^3)*sin(d*x + c) - ((a^3*b + a*b^3)*d^2*e^2*f - 2*(a^3*b + a*b^3)*
c*d*e*f^2 + (a^3*b + a*b^3)*c^2*f^3 - (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2
+ a*b^3*c^2*f^3)*cos(d*x + c)^2 + 2*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^
2 + a^2*b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(2*b*cos(d*x
+ c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 6*(2*(a^4
 - b^4)*d*e*f^2 - 2*(a^4 - b^4)*c*f^3 - 2*((a^2*b^2 - b^4)*d*e*f^2 - (a^2*b
^2 - b^4)*c*f^3)*cos(d*x + c)^2 + 4*((a^3*b - a*b^3)*d*e*f^2 - (a^3*b - a*b
^3)*c*f^3)*sin(d*x + c) + ((a^3*b + a*b^3)*d^2*e^2*f - 2*(a^3*b + a*b^3)*c*
d*e*f^2 + (a^3*b + a*b^3)*c^2*f^3 - (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 +
a*b^3*c^2*f^3)*cos(d*x + c)^2 + 2*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2
+ a^2*b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x +
 c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 6*(2*(a^4
- b^4)*d*e*f^2 - 2*(a^4 - b^4)*c*f^3 - 2*((a^2*b^2 - b^4)*d*e*f^2 - (a^2*b^
2 - b^4)*c*f^3)*cos(d*x + c)^2 + 4*((a^3*b - a*b^3)*d*e*f^2 - (a^3*b - a*b^
3)*c*f^3)*sin(d*x + c) + ((a^3*b + a*b^3)*d^2*e^2*f - 2*(a^3*b + a*b^3)*c*d
*e*f^2 + (a^3*b + a*b^3)*c^2*f^3 - (a*b^3*d^2*e^2*f - 2*a*b^3*c*d*e*f^2 + a
*b^3*c^2*f^3)*cos(d*x + c)^2 + 2*(a^2*b^2*d^2*e^2*f - 2*a^2*b^2*c*d*e*f^2 +
 a^2*b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(-2*b*cos(d*x +
c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 6*(2*(a^4 -
 b^4)*d*f^3*x + 2*(a^4 - b^4)*c*f^3 - 2*((a^2*b^2 - b^4)*d*f^3*x + (a^2*b^2
 - b^4)*c*f^3)*cos(d*x + c)^2 + 4*((a^3*b - a*b^3)*d*f^3*x + (a^3*b - a*b^3
)*c*f^3)*sin(d*x + c) - ((a^3*b + a*b^3)*d^2*f^3*x^2 + 2*(a^3*b + a*b^3)*d^
2*e*f^2*x + 2*(a^3*b + a*b^3)*c*d*e*f^2 - (a^3*b + a*b^3)*c^2*f^3 - (a*b^3*
d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cos(
d*x + c)^2 + 2*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d
*e*f^2 - a^2*b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(2*
I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 6*(2*(a^4 - b^4)*d*f^3*x + 2*(a^4 - b^4
)*c*f^3 - 2*((a^2*b^2 - b^4)*d*f^3*x + (a^2*b^2 - b^4)*c*f^3)*cos(d*x + c)^
2 + 4*((a^3*b - a*b^3)*d*f^3*x + (a^3*b - a*b^3)*c*f^3)*sin(d*x + c) + ((a^
3*b + a*b^3)*d^2*f^3*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f^2*x + 2*(a^3*b + a*b^3
)*c*d*e*f^2 - (a^3*b + a*b^3)*c^2*f^3 - (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*
```

```
f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cos(d*x + c)^2 + 2*(a^2*b^2*d^2*
f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*si
n(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d
*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*
b)/b) + 6*(2*(a^4 - b^4)*d*f^3*x + 2*(a^4 - b^4)*c*f^3 - 2*((a^2*b^2 - b^4)
*d*f^3*x + (a^2*b^2 - b^4)*c*f^3)*cos(d*x + c)^2 + 4*((a^3*b - a*b^3)*d*f^3
*x + (a^3*b - a*b^3)*c*f^3)*sin(d*x + c) - ((a^3*b + a*b^3)*d^2*f^3*x^2 + 2
*(a^3*b + a*b^3)*d^2*e*f^2*x + 2*(a^3*b + a*b^3)*c*d*e*f^2 - (a^3*b + a*b^3
)*c^2*f^3 - (a*b^3*d^2*f^3*x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 -
a*b^3*c^2*f^3)*cos(d*x + c)^2 + 2*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^
2*x + 2*a^2*b^2*c*d*e*f^2 - a^2*b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2
)/b^2))*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c)
 + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 6*(2*(a^4 - b^4)*d*
f^3*x + 2*(a^4 - b^4)*c*f^3 - 2*((a^2*b^2 - b^4)*d*f^3*x + (a^2*b^2 - b^4)*
c*f^3)*cos(d*x + c)^2 + 4*((a^3*b - a*b^3)*d*f^3*x + (a^3*b - a*b^3)*c*f^3)
*sin(d*x + c) + ((a^3*b + a*b^3)*d^2*f^3*x^2 + 2*(a^3*b + a*b^3)*d^2*e*f^2*
x + 2*(a^3*b + a*b^3)*c*d*e*f^2 - (a^3*b + a*b^3)*c^2*f^3 - (a*b^3*d^2*f^3*
x^2 + 2*a*b^3*d^2*e*f^2*x + 2*a*b^3*c*d*e*f^2 - a*b^3*c^2*f^3)*cos(d*x + c)
^2 + 2*(a^2*b^2*d^2*f^3*x^2 + 2*a^2*b^2*d^2*e*f^2*x + 2*a^2*b^2*c*d*e*f^2 -
 a^2*b^2*c^2*f^3)*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))*log(1/2*(-2*I*a*cos
(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-
(a^2 - b^2)/b^2) + 2*b)/b))/((a^4*b^3 - 2*a^2*b^5 + b^7)*d^4*cos(d*x + c)^2
 - 2*(a^5*b^2 - 2*a^3*b^4 + a*b^6)*d^4*sin(d*x + c) - (a^6*b - a^4*b^3 - a^
2*b^5 + b^7)*d^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cos\left(dx+c\right)}{\left(b\sin\left(dx+c\right)+a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((f*x + e)^3*cos(d*x + c)/(b*sin(d*x + c) + a)^3, x)
```

maple [F] time = 2.77, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3}\cos\left(dx+c\right)}{\left(a+b\sin\left(dx+c\right)\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c))^3,x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c))^3,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)/(a+b*sin(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x))^3,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)/(a+b*sin(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.325 $\int \frac{(e+fx)^3 \cos(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=765

$$\frac{6f^3\sqrt{a^2-b^2}\,\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{abd^4}-\frac{6f^3\sqrt{a^2-b^2}\,\mathrm{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{abd^4}-\frac{6if^2\sqrt{a^2-b^2}\,(e+fx)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{abd^3}+\frac{6if^2\sqrt{a^2-b^2}}{}$$

```
[Out] -1/4*(f*x+e)^4/b/f-2*(f*x+e)^3*arctanh(exp(I*(d*x+c)))/a/d+6*I*f^3*polylog(
4,exp(I*(d*x+c)))/a/d^4+6*I*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^
2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/a/b/d^3-6*f^2*(f*x+e)*polylog(3,-exp(I*(d*x+
c)))/a/d^3+6*f^2*(f*x+e)*polylog(3,exp(I*(d*x+c)))/a/d^3-6*I*f^3*polylog(4,
-exp(I*(d*x+c)))/a/d^4+I*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/
2)))*(a^2-b^2)^(1/2)/a/b/d-6*I*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a-
(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/a/b/d^3-3*I*f*(f*x+e)^2*polylog(2,exp(I*(
d*x+c)))/a/d^2-3*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2
)))*(a^2-b^2)^(1/2)/a/b/d^2+3*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(
a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/a/b/d^2+3*I*f*(f*x+e)^2*polylog(2,-exp(I*(
d*x+c)))/a/d^2-I*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*(a^
2-b^2)^(1/2)/a/b/d+6*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*
(a^2-b^2)^(1/2)/a/b/d^4-6*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/
2)))*(a^2-b^2)^(1/2)/a/b/d^4
```

Rubi [A] time = 1.43, antiderivative size = 765, normalized size of antiderivative = 1.00, number of steps used = 33, number of rules used = 14, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4543, 4408, 3296, 2637, 4183, 2531, 6609, 2282, 6589, 4525, 32, 3323, 2264, 2190}

$$-\frac{6if^2\sqrt{a^2-b^2}\,(e+fx)\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{abd^3}+\frac{6if^2\sqrt{a^2-b^2}\,(e+fx)\mathrm{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{abd^3}-\frac{3f\sqrt{a^2-b^2}\,(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x]*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(e + f*x)^4/(4*b*f) - (2*(e + f*x)^3*ArcTanh[E^(I*(c + d*x))])/(a*d) - (I*
Sqrt[a^2 - b^2]*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b
^2])])/(a*b*d) + (I*Sqrt[a^2 - b^2]*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)
))/(a + Sqrt[a^2 - b^2])])/(a*b*d) + ((3*I)*f*(e + f*x)^2*PolyLog[2, -E^(I*
(c + d*x))])/(a*d^2) - ((3*I)*f*(e + f*x)^2*PolyLog[2, E^(I*(c + d*x))])/(a
*d^2) - (3*Sqrt[a^2 - b^2]*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(
a - Sqrt[a^2 - b^2])])/(a*b*d^2) + (3*Sqrt[a^2 - b^2]*f*(e + f*x)^2*PolyLog
[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b*d^2) - (6*f^2*(e + f
```

```
*x)*PolyLog[3, -E^(I*(c + d*x))])/(a*d^3) + (6*f^2*(e + f*x)*PolyLog[3, E^(
I*(c + d*x))])/(a*d^3) - ((6*I)*Sqrt[a^2 - b^2]*f^2*(e + f*x)*PolyLog[3, (I
*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b*d^3) + ((6*I)*Sqrt[a^2 - b
^2]*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/
(a*b*d^3) - ((6*I)*f^3*PolyLog[4, -E^(I*(c + d*x))])/(a*d^4) + ((6*I)*f^3*P
olyLog[4, E^(I*(c + d*x))])/(a*d^4) + (6*Sqrt[a^2 - b^2]*f^3*PolyLog[4, (I*
b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b*d^4) - (6*Sqrt[a^2 - b^2]*f
^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b*d^4)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
```

```
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\cos(c+dx)\cot(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^3\csc(c+dx)\,dx}{a} - \frac{\int (e+fx)^3\,dx}{b} + \left(\frac{a}{b}-\frac{b}{a}\right)\int \frac{(e+fx)}{a+b\sin(c+}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \left(2\left(\frac{a}{b}-\frac{b}{a}\right)\right)\int \frac{e^{i(c+d}}{ib+2ae^{i(c}}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{3if(e+fx)^2\text{Li}_2\left(-e^{i(c+dx)}\right.}{ad^2}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}(e+fx)^3\log\left(1\right.}{abd}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}(e+fx)^3\log\left(1\right.}{abd}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}(e+fx)^3\log\left(1\right.}{abd}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}(e+fx)^3\log\left(1\right.}{abd}$$

$$= -\frac{(e+fx)^4}{4bf} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}(e+fx)^3\log\left(1\right.}{abd}$$

Mathematica [A] time = 1.93, size = 1194, normalized size = 1.56

$$-\frac{x\left(4e^3+6fxe^2+4f^2x^2e+f^3x^3\right)}{4b} + \frac{\left(a^2-b^2\right)\left(2\sqrt{b^2-a^2}\,e^3\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right)d^3+\sqrt{a^2-b^2}\,f^3x^3\log\left(1-\frac{be^{i(c+}}{\sqrt{b^2-a}}\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x]*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/4*(x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3))/b + ((a^2 - b^2)*(2*Sq
rt[-a^2 + b^2]*d^3*e^3*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] +
```

```
3*Sqrt[a^2 - b^2]*d^3*e^2*f*x*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a
^2 + b^2])] + 3*Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*Log[1 - (b*E^(I*(c + d*x)))/(
(-I)*a + Sqrt[-a^2 + b^2])] + Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log[1 - (b*E^(I*(
c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d^3*e^2*f*x*Log
[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - 3*Sqrt[a^2 - b^2]*d^3*
e*f^2*x^2*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] - Sqrt[a^2
- b^2]*d^3*f^3*x^3*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] -
(3*I)*Sqrt[a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(I*(c + d*x)))/((-I
)*a + Sqrt[-a^2 + b^2])] + (3*I)*Sqrt[a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[
2, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] + 6*Sqrt[a^2 - b^2]*d*e
*f^2*PolyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 6*Sqrt[a
^2 - b^2]*d*f^3*x*PolyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2]
)] - 6*Sqrt[a^2 - b^2]*d*e*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt
[-a^2 + b^2]))] - 6*Sqrt[a^2 - b^2]*d*f^3*x*PolyLog[3, -((b*E^(I*(c + d*x))
)/(I*a + Sqrt[-a^2 + b^2]))] + (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, (b*E^(I
*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - (6*I)*Sqrt[a^2 - b^2]*f^3*PolyL
og[4, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))]))/(a*b*Sqrt[-(a^2 -
b^2)^2]*d^4) + (I*((2*I)*(e + f*x)^3*ArcTanh[Cos[c + d*x] + I*Sin[c + d*x]]
 + (3*f*(d^2*(e + f*x)^2*PolyLog[2, -Cos[c + d*x] - I*Sin[c + d*x]] + (2*I)
*d*f*(e + f*x)*PolyLog[3, -Cos[c + d*x] - I*Sin[c + d*x]] - 2*f^2*PolyLog[4
, -Cos[c + d*x] - I*Sin[c + d*x]]))/d^3 - (3*f*(d^2*(e + f*x)^2*PolyLog[2,
Cos[c + d*x] + I*Sin[c + d*x]] + (2*I)*d*f*(e + f*x)*PolyLog[3, Cos[c + d*x
] + I*Sin[c + d*x]] - 2*f^2*PolyLog[4, Cos[c + d*x] + I*Sin[c + d*x]]))/d^3
))/(a*d)
```

fricas [C] time = 0.74, size = 3109, normalized size = 4.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -1/4*(a*d^4*f^3*x^4 + 4*a*d^4*e*f^2*x^3 + 6*a*d^4*e^2*f*x^2 + 4*a*d^4*e^3*x
 + 12*I*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2
*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2))/b) - 12*I*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x +
 c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
 b^2)/b^2))/b) - 12*I*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*c
os(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2))/b) + 12*I*b*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(
-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*I*b*f^3*polylog(4, cos(d*x + c) + I*sin
(d*x + c)) + 12*I*b*f^3*polylog(4, cos(d*x + c) - I*sin(d*x + c)) - 12*I*b*
f^3*polylog(4, -cos(d*x + c) + I*sin(d*x + c)) + 12*I*b*f^3*polylog(4, -cos
```

(d*x + c) - I*sin(d*x + c)) - 2*(3*I*b*d^2*f^3*x^2 + 6*I*b*d^2*e*f^2*x + 3*I*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(-3*I*b*d^2*f^3*x^2 - 6*I*b*d^2*e*f^2*x - 3*I*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(-3*I*b*d^2*f^3*x^2 - 6*I*b*d^2*e*f^2*x - 3*I*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(3*I*b*d^2*f^3*x^2 + 6*I*b*d^2*e*f^2*x + 3*I*b*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 12*(b*d*f^3*x + b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*(b*d*f^3*x + b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(b*d*f^3*x + b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*(b*d*f^3*x + b*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - (-6*I*b*d^2*f^3*x^2 - 12*I*b*d^2*e*f^2*x - 6*I*b*d^2*e^2*f)*dilog(cos(d*x + c) + I*sin(d*x + c)) - (6*I*b*d^2*f^3*x^2 + 12*I*b*d^2*

```
e*f^2*x + 6*I*b*d^2*e^2*f)*dilog(cos(d*x + c) - I*sin(d*x + c)) - (-6*I*b*d
^2*f^3*x^2 - 12*I*b*d^2*e*f^2*x - 6*I*b*d^2*e^2*f)*dilog(-cos(d*x + c) + I*
sin(d*x + c)) - (6*I*b*d^2*f^3*x^2 + 12*I*b*d^2*e*f^2*x + 6*I*b*d^2*e^2*f)*
dilog(-cos(d*x + c) - I*sin(d*x + c)) + 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^
2 + 3*b*d^3*e^2*f*x + b*d^3*e^3)*log(cos(d*x + c) + I*sin(d*x + c) + 1) + 2
*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*d^3*e^2*f*x + b*d^3*e^3)*log(cos(
d*x + c) - I*sin(d*x + c) + 1) - 2*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d
*e*f^2 - b*c^3*f^3)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) - 2*(
b*d^3*e^3 - 3*b*c*d^2*e^2*f + 3*b*c^2*d*e*f^2 - b*c^3*f^3)*log(-1/2*cos(d*x
 + c) - 1/2*I*sin(d*x + c) + 1/2) - 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 +
3*b*d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*log(-cos(d
*x + c) + I*sin(d*x + c) + 1) - 2*(b*d^3*f^3*x^3 + 3*b*d^3*e*f^2*x^2 + 3*b*
d^3*e^2*f*x + 3*b*c*d^2*e^2*f - 3*b*c^2*d*e*f^2 + b*c^3*f^3)*log(-cos(d*x +
 c) - I*sin(d*x + c) + 1) - 12*(b*d*f^3*x + b*d*e*f^2)*polylog(3, cos(d*x +
 c) + I*sin(d*x + c)) - 12*(b*d*f^3*x + b*d*e*f^2)*polylog(3, cos(d*x + c)
- I*sin(d*x + c)) + 12*(b*d*f^3*x + b*d*e*f^2)*polylog(3, -cos(d*x + c) + I
*sin(d*x + c)) + 12*(b*d*f^3*x + b*d*e*f^2)*polylog(3, -cos(d*x + c) - I*si
n(d*x + c)))/(a*b*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] Timed out
```

maple [F] time = 4.64, size = 0, normalized size = 0.00

$$\int \frac{\left(f x +e \right)^{3} \cos \left(d x +c \right) \cot \left(d x +c \right)}{a +b \sin \left(d x +c \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*cot(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^{3} \cos\left(c + dx\right) \cot\left(c + dx\right)}{a + b \sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*cos(c + d*x)*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.326 $\int \frac{(e+fx)^2 \cos(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=557

$$-\frac{2if^2\sqrt{a^2-b^2}\,\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{abd^3}+\frac{2if^2\sqrt{a^2-b^2}\,\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{abd^3}-\frac{2f\sqrt{a^2-b^2}\,(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{abd^2}+\frac{2f\sqrt{a^2-b^2}\,(e}{}$$

```
[Out] -1/3*(f*x+e)^3/b/f-2*(f*x+e)^2*arctanh(exp(I*(d*x+c)))/a/d+2*I*f*(f*x+e)*po
lylog(2,-exp(I*(d*x+c)))/a/d^2-2*I*f*(f*x+e)*polylog(2,exp(I*(d*x+c)))/a/d^
2-2*f^2*polylog(3,-exp(I*(d*x+c)))/a/d^3+2*f^2*polylog(3,exp(I*(d*x+c)))/a/
d^3-I*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2
)/a/b/d+I*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^
(1/2)/a/b/d-2*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*(
a^2-b^2)^(1/2)/a/b/d^2+2*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2
)^(1/2)))*(a^2-b^2)^(1/2)/a/b/d^2-2*I*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(
a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/a/b/d^3+2*I*f^2*polylog(3,I*b*exp(I*(d*x+c
))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/a/b/d^3
```

Rubi [A] time = 1.19, antiderivative size = 557, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {4543, 4408, 3296, 2638, 4183, 2531, 2282, 6589, 4525, 32, 3323, 2264, 2190}

$$-\frac{2f\sqrt{a^2-b^2}\,(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{abd^2}+\frac{2f\sqrt{a^2-b^2}\,(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{abd^2}-\frac{2if^2\sqrt{a^2-b^2}\,\text{PolyLo}}{abd^3}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x]*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(e + f*x)^3/(3*b*f) - (2*(e + f*x)^2*ArcTanh[E^(I*(c + d*x))])/(a*d) - (I*
Sqrt[a^2 - b^2]*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b
^2])])/(a*b*d) + (I*Sqrt[a^2 - b^2]*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)
))/(a + Sqrt[a^2 - b^2])])/(a*b*d) + ((2*I)*f*(e + f*x)*PolyLog[2, -E^(I*(c
 + d*x))])/(a*d^2) - ((2*I)*f*(e + f*x)*PolyLog[2, E^(I*(c + d*x))])/(a*d^2
) - (2*Sqrt[a^2 - b^2]*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sq
rt[a^2 - b^2])])/(a*b*d^2) + (2*Sqrt[a^2 - b^2]*f*(e + f*x)*PolyLog[2, (I*b
*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b*d^2) - (2*f^2*PolyLog[3, -E^
(I*(c + d*x))])/(a*d^3) + (2*f^2*PolyLog[3, E^(I*(c + d*x))])/(a*d^3) - ((2
*I)*Sqrt[a^2 - b^2]*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^
2])])/(a*b*d^3) + ((2*I)*Sqrt[a^2 - b^2]*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)
))/(a + Sqrt[a^2 - b^2])])/(a*b*d^3)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
```

```
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\cos(c+dx)\cot(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^2\csc(c+dx)\,dx}{a} - \frac{\int (e+fx)^2\,dx}{b} + \left(\frac{a}{b}-\frac{b}{a}\right)\int \frac{(e+fx)}{a+b\sin(c+}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \left(2\left(\frac{a}{b}-\frac{b}{a}\right)\right)\int \frac{e^{i(c+d}}{ib+2ae^{i(c}}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{2if(e+fx)\text{Li}_2\left(-e^{i(c+dx)}\right)}{ad^2}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}\,(e+fx)^2\log\left(1\right.}{abd}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}\,(e+fx)^2\log\left(1\right.}{abd}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}\,(e+fx)^2\log\left(1\right.}{abd}$$

$$= -\frac{(e+fx)^3}{3bf} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}\,(e+fx)^2\log\left(1\right.}{abd}$$

Mathematica [A] time = 1.67, size = 607, normalized size = 1.09

$$\frac{i\left(a^2-b^2\right)\left(-i\left(d^2\left(2e^2\sqrt{b^2-a^2}\,\tan^{-1}\left(\frac{ia+be^{i(c+dx)}}{\sqrt{a^2-b^2}}\right)+fx\sqrt{a^2-b^2}\,(2e+fx)\left(\log\left(1-\frac{be^{i(c+dx)}}{\sqrt{b^2-a^2}-ia}\right)-\log\left(1+\frac{be^{i(c+}}{\sqrt{b^2-a^2}}\right.\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x]*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/3*(x*(3*e^2 + 3*e*f*x + f^2*x^2))/b + ((e + f*x)^2*Log[1 - E^(I*(c + d*x
))] - (e + f*x)^2*Log[1 + E^(I*(c + d*x))] + ((2*I)*f*(d*(e + f*x)*PolyLog[
2, -E^(I*(c + d*x))] + I*f*PolyLog[3, -E^(I*(c + d*x))]))/d^2 + (2*f*((-I)*
d*(e + f*x)*PolyLog[2, E^(I*(c + d*x))] + f*PolyLog[3, E^(I*(c + d*x))]))/d
^2)/(a*d) + (I*(a^2 - b^2)*(-2*Sqrt[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, (b*
E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 2*Sqrt[a^2 - b^2]*d*f*(e +
f*x)*PolyLog[2, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] - I*(d^2*(
2*Sqrt[-a^2 + b^2]*e^2*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] +
Sqrt[a^2 - b^2]*f*x*(2*e + f*x)*(Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt
[-a^2 + b^2])] - Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])])) +
2*Sqrt[a^2 - b^2]*f^2*PolyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 +
b^2])] - 2*Sqrt[a^2 - b^2]*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt
[-a^2 + b^2]))])))/(a*b*Sqrt[-(a^2 - b^2)^2]*d^3)
```

fricas [C] time = 0.70, size = 2123, normalized size = 3.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -1/12*(4*a*d^3*f^2*x^3 + 12*a*d^3*e*f*x^2 + 12*a*d^3*e^2*x + 12*b*f^2*sqrt(
-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2
*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*b*f^2*
sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c
) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 12*b
*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d
*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)
- 12*b*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a
*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
))/b) - 12*b*f^2*polylog(3, cos(d*x + c) + I*sin(d*x + c)) - 12*b*f^2*polyl
og(3, cos(d*x + c) - I*sin(d*x + c)) + 12*b*f^2*polylog(3, -cos(d*x + c) +
I*sin(d*x + c)) + 12*b*f^2*polylog(3, -cos(d*x + c) - I*sin(d*x + c)) - 2*(
6*I*b*d*f^2*x + 6*I*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d
*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(-6*I*b*d*f^2*x - 6*I*b*d*e*f)*sqrt(-(a^2
- b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*
x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*(-6*I*b
*d*f^2*x - 6*I*b*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x +
 c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
 b^2)/b^2) + 2*b)/b + 1) - 2*(6*I*b*d*f^2*x + 6*I*b*d*e*f)*sqrt(-(a^2 - b^2
)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x +
c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 6*(b*d^2*e^2
- 2*b*c*d*e*f + b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*
```

```
I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) - 6*(b*d^2*e^2 - 2*b
*c*d*e*f + b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*s
in(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 6*(b*d^2*e^2 - 2*b*c*d*
e*f + b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d
*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 6*(b*d^2*e^2 - 2*b*c*d*e*f
+ b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x +
 c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 6*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*
x + 2*b*c*d*e*f - b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x
+ c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2
- b^2)/b^2) + 2*b)/b) + 6*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*
c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
 c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
) - 6*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*sqrt(-(a^2
- b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x
+ c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 6*(b*d^2*f^2*x^
2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2
*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - (-12*I*b*d*f^2*x - 12*I*b*d*e*f)*d
ilog(cos(d*x + c) + I*sin(d*x + c)) - (12*I*b*d*f^2*x + 12*I*b*d*e*f)*dilog
(cos(d*x + c) - I*sin(d*x + c)) - (-12*I*b*d*f^2*x - 12*I*b*d*e*f)*dilog(-c
os(d*x + c) + I*sin(d*x + c)) - (12*I*b*d*f^2*x + 12*I*b*d*e*f)*dilog(-cos(
d*x + c) - I*sin(d*x + c)) + 6*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + b*d^2*e^2)*
log(cos(d*x + c) + I*sin(d*x + c) + 1) + 6*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x +
 b*d^2*e^2)*log(cos(d*x + c) - I*sin(d*x + c) + 1) - 6*(b*d^2*e^2 - 2*b*c*d
*e*f + b*c^2*f^2)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) - 6*(b*
d^2*e^2 - 2*b*c*d*e*f + b*c^2*f^2)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x +
c) + 1/2) - 6*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2*b*c*d*e*f - b*c^2*f^2)*log
(-cos(d*x + c) + I*sin(d*x + c) + 1) - 6*(b*d^2*f^2*x^2 + 2*b*d^2*e*f*x + 2
*b*c*d*e*f - b*c^2*f^2)*log(-cos(d*x + c) - I*sin(d*x + c) + 1))/(a*b*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] Timed out
```

maple [F] time = 3.79, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \cos \left(dx+c\right) \cot \left(dx+c\right)}{a+b \sin \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*cot(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^2 \cos\left(c + dx\right) \cot\left(c + dx\right)}{a + b\sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*cos(c + d*x)*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.327 $\int \frac{(e+fx)\cos(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=351

$$-\frac{f\sqrt{a^2-b^2}\,\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{abd^2}+\frac{f\sqrt{a^2-b^2}\,\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{abd^2}-\frac{i\sqrt{a^2-b^2}\,(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{abd}+\frac{i\sqrt{a^2-b^2}\,(e+f}{}$$

```
[Out] -e*x/b-1/2*f*x^2/b-2*(f*x+e)*arctanh(exp(I*(d*x+c)))/a/d+I*f*polylog(2,-exp
(I*(d*x+c)))/a/d^2-I*f*polylog(2,exp(I*(d*x+c)))/a/d^2-I*(f*x+e)*ln(1-I*b*e
xp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/a/b/d+I*(f*x+e)*ln(1-I*b
*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/a/b/d-f*polylog(2,I*b*
exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/a/b/d^2+f*polylog(2,I*b
*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))*(a^2-b^2)^(1/2)/a/b/d^2
```

Rubi [A] time = 0.66, antiderivative size = 351, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 11, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.367, Rules used = {4543, 4408, 3296, 2637, 4183, 2279, 2391, 4525, 3323, 2264, 2190}

$$-\frac{f\sqrt{a^2-b^2}\,\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{abd^2}+\frac{f\sqrt{a^2-b^2}\,\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{abd^2}+\frac{if\,\text{PolyLog}\left(2,-e^{i(c+dx)}\right)}{ad^2}-\frac{if\,\text{PolyLog}\left(\right.}{ad^2}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x]*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -((e*x)/b) - (f*x^2)/(2*b) - (2*(e + f*x)*ArcTanh[E^(I*(c + d*x))])/(a*d) -
 (I*Sqrt[a^2 - b^2]*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 -
 b^2])])/(a*b*d) + (I*Sqrt[a^2 - b^2]*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)
))/(a + Sqrt[a^2 - b^2])])/(a*b*d) + (I*f*PolyLog[2, -E^(I*(c + d*x))])/(a*
d^2) - (I*f*PolyLog[2, E^(I*(c + d*x))])/(a*d^2) - (Sqrt[a^2 - b^2]*f*PolyL
og[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b*d^2) + (Sqrt[a^2 -
 b^2]*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cos(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\cos(c+dx)\cot(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cos^2(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)\csc(c+dx)\,dx}{a} - \frac{\int (e+fx)\,dx}{b} + \left(\frac{a}{b}-\frac{b}{a}\right)\int \frac{e+fx}{a+b\sin(c+dx)}$$

$$= -\frac{ex}{b} - \frac{fx^2}{2b} - \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \left(2\left(\frac{a}{b}-\frac{b}{a}\right)\right)\int \frac{e^{i(c+dx)}(e}{ib+2ae^{i(c+dx)}}$$

$$= -\frac{ex}{b} - \frac{fx^2}{2b} - \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{\left(2i\sqrt{a^2-b^2}\right)\int \frac{e^{i(c+dx)}(e+f}{2a-2\sqrt{a^2-b^2}-2i}}{a}$$

$$= -\frac{ex}{b} - \frac{fx^2}{2b} - \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}\,(e+fx)\log\left(1-\frac{ib}{a-}\right.}{abd}$$

$$= -\frac{ex}{b} - \frac{fx^2}{2b} - \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}\,(e+fx)\log\left(1-\frac{ib}{a-}\right.}{abd}$$

$$= -\frac{ex}{b} - \frac{fx^2}{2b} - \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} - \frac{i\sqrt{a^2-b^2}\,(e+fx)\log\left(1-\frac{ib}{a-}\right.}{abd}$$

Mathematica [B] time = 6.77, size = 812, normalized size = 2.31

$$\frac{(c+dx)(cf-d(2e+fx))}{b} + \frac{2de\log\left(\tan\left(\frac{1}{2}(c+dx)\right)\right)}{a} - \frac{2cf\log\left(\tan\left(\frac{1}{2}(c+dx)\right)\right)}{a} + \frac{2f\left((c+dx)\left(\log\left(1-e^{i(c+dx)}\right)-\log\left(1+e^{i(c+dx)}\right)\right)+i\left(\mathrm{Li}_2\left(-e^{i(c+dx)}\right)-\mathrm{Li}_2\left(e^{i(c\right.\right.\right.}{a}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Cos[c + d*x]*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (((c + d*x)*(c*f - d*(2*e + f*x)))/b + (2*d*e*Log[Tan[(c + d*x)/2]])/a - (2
*c*f*Log[Tan[(c + d*x)/2]])/a + (2*f*((c + d*x)*(Log[1 - E^(I*(c + d*x))] -
 Log[1 + E^(I*(c + d*x))]) + I*(PolyLog[2, -E^(I*(c + d*x))] - PolyLog[2, E
^(I*(c + d*x))])))/a + (2*(a^2 - b^2)*d*(e + f*x)*((2*(d*e - c*f)*ArcTan[(b
 + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] - (I*f*(Log[1 - I*
Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((-I)*a +
 b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b
```

```
 + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1 + I*Tan[(c + d*x)/2
]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b
^2])] + PolyLog[2, (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2
]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(-b + Sqrt[
-a^2 + b^2] - a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2])] + PolyLog[2
, (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])]))/Sqrt[-a^2 + b^
2] - (I*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c
 + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])] + PolyLog[2, (a + I*a*Tan[(c + d*
x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2]))/(a*b*(d*e - c*
f + I*f*Log[1 - I*Tan[(c + d*x)/2]] - I*f*Log[1 + I*Tan[(c + d*x)/2]])))/(2
*d^2)
```

fricas [B] time = 0.69, size = 1288, normalized size = 3.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fric
as")
```

```
[Out] -1/4*(2*a*d^2*f*x^2 + 4*a*d^2*e*x - 2*I*b*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1
/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*b*f*sqrt(-(a^2 - b^2)/b^2
)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I
*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*b*f*sqrt(-(a^2
- b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d
*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*I*b*f*
sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) -
 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)
 + 2*I*b*f*dilog(cos(d*x + c) + I*sin(d*x + c)) - 2*I*b*f*dilog(cos(d*x + c
) - I*sin(d*x + c)) + 2*I*b*f*dilog(-cos(d*x + c) + I*sin(d*x + c)) - 2*I*b
*f*dilog(-cos(d*x + c) - I*sin(d*x + c)) - 2*(b*d*e - b*c*f)*sqrt(-(a^2 - b
^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/
b^2) + 2*I*a) - 2*(b*d*e - b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x +
c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(b*d*e -
b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) +
2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*(b*d*e - b*c*f)*sqrt(-(a^2 - b^2)/b
^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2)
 - 2*I*a) - 2*(b*d*f*x + b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d
*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2) + 2*b)/b) + 2*(b*d*f*x + b*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1
/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*(b*d*f*x + b*c*f)*sqrt(-(a^2 -
b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x +
c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*(b*d*f*x + b*c*
```

```
f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) -
 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2
*(b*d*f*x + b*d*e)*log(cos(d*x + c) + I*sin(d*x + c) + 1) + 2*(b*d*f*x + b*
d*e)*log(cos(d*x + c) - I*sin(d*x + c) + 1) - 2*(b*d*e - b*c*f)*log(-1/2*co
s(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) - 2*(b*d*e - b*c*f)*log(-1/2*cos(d*x
 + c) - 1/2*I*sin(d*x + c) + 1/2) - 2*(b*d*f*x + b*c*f)*log(-cos(d*x + c) +
 I*sin(d*x + c) + 1) - 2*(b*d*f*x + b*c*f)*log(-cos(d*x + c) - I*sin(d*x +
c) + 1))/(a*b*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac
")
```

```
[Out] Timed out
```

maple [B] time = 0.51, size = 1207, normalized size = 3.44

$$-\frac{f\,x^2}{2b}-\frac{ex}{b}-\frac{af\ln\left(\frac{ia+b\,\mathrm{e}^{i(dx+c)}+\sqrt{-a^2+b^2}}{ia+\sqrt{-a^2+b^2}}\right)x}{db\sqrt{-a^2+b^2}}-\frac{af\ln\left(\frac{ia+b\,\mathrm{e}^{i(dx+c)}+\sqrt{-a^2+b^2}}{ia+\sqrt{-a^2+b^2}}\right)c}{d^2b\sqrt{-a^2+b^2}}-\frac{e\ln\left(\mathrm{e}^{i(dx+c)}+1\right)}{ad}+\frac{e\ln\left(\mathrm{e}^{i(dx+c)}-1\right)}{ad}+\frac{2if c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] -1/2*f*x^2/b-e*x/b-1/d/b*a*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^
2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-1/d^2/b*a*f/(-a^2+b^2)^(1/2)*ln((I*
a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-1/a/d*e*ln(e
xp(I*(d*x+c))+1)+1/a/d*e*ln(exp(I*(d*x+c))-1)-I/d^2/b*a*f/(-a^2+b^2)^(1/2)*
dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))-1/a/d
*ln(exp(I*(d*x+c))+1)*f*x+1/d*f*b/a/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c
))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x+1/d^2*f*b/a/(-a^2+b^2)^(1/2)
*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c+2*I/d
^2*f*c/a*b/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2
)^(1/2))+1/d/b*a*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/
2))/(I*a-(-a^2+b^2)^(1/2)))*x+1/d^2/b*a*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*
(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c+I/d^2*f*dilog(exp(I*(d
*x+c)))/a-I/d^2*f*b/a/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^
2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))+I/d^2*f*b/a/(-a^2+b^2)^(1/2)*dilog((I*a+b
*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))+I/b/d^2*a*f/(-a^2
+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(
```

```
1/2)))-1/d*f*b/a/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2)
)/(I*a-(-a^2+b^2)^(1/2)))*x-1/d^2*f*b/a/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d
*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c-1/a/d^2*f*c*ln(exp(I*(d*
x+c))-1)-2*I/b/d^2*a*f*c/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-
2*a)/(-a^2+b^2)^(1/2))+2*I/b/d*a*e/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I
*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))+I/d^2*f/a*dilog(exp(I*(d*x+c))+1)-2*I/d*e/
a*b/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2)
)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*cot(c + d*x)*(e + f*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + f x\right) \cos\left(c + d x\right) \cot\left(c + d x\right)}{a + b \sin\left(c + d x\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*cos(c + d*x)*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.328 $\int \frac{\cos(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=75

$$\frac{2\sqrt{a^2-b^2}\,\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{abd}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}-\frac{x}{b}$$

```
[Out] -x/b-arctanh(cos(d*x+c))/a/d+2*arctan((b+a*tan(1/2*d*x+1/2*c))/(a^2-b^2)^(1
/2))*(a^2-b^2)^(1/2)/a/b/d
```

Rubi [A] time = 0.18, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {2889, 3058, 2660, 618, 204, 3770}

$$\frac{2\sqrt{a^2-b^2}\,\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{abd}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}-\frac{x}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(Cos[c + d*x]*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(x/b) + (2*Sqrt[a^2 - b^2]*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]
])/(a*b*d) - ArcTanh[Cos[c + d*x]]/(a*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2889

```
Int[cos[(e_.) + (f_.)*(x_)]^2*((d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)*((a_) +
(b_.)*sin[(e_.) + (f_.)*(x_)])^(m_), x_Symbol] :> Int[(d*Sin[e + f*x])^n*(a
 + b*Sin[e + f*x])^m*(1 - Sin[e + f*x]^2), x] /; FreeQ[{a, b, d, e, f, m, n
}, x] && NeQ[a^2 - b^2, 0] && (IGtQ[m, 0] || IntegersQ[2*m, 2*n])
```

Rule 3058

```
Int[((A_.) + (C_.)*sin[(e_.) + (f_.)*(x_)]^2)/(((a_) + (b_.)*sin[(e_.) + (f
_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])), x_Symbol] :> Simp[(C*x
)/(b*d), x] + (Dist[(A*b^2 + a^2*C)/(b*(b*c - a*d)), Int[1/(a + b*Sin[e + f
*x]), x], x] - Dist[(c^2*C + A*d^2)/(d*(b*c - a*d)), Int[1/(c + d*Sin[e + f
*x]), x], x]) /; FreeQ[{a, b, c, d, e, f, A, C}, x] && NeQ[b*c - a*d, 0] &&
 NeQ[a^2 - b^2, 0] && NeQ[c^2 - d^2, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\cos(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx &= \int \frac{\csc(c+dx)\left(1-\sin^2(c+dx)\right)}{a+b\sin(c+dx)}\,dx\\
&= -\frac{x}{b}+\frac{\int \csc(c+dx)\,dx}{a}-\left(-\frac{a}{b}+\frac{b}{a}\right)\int \frac{1}{a+b\sin(c+dx)}\,dx\\
&= -\frac{x}{b}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}+\frac{\left(2\left(\frac{a}{b}-\frac{b}{a}\right)\right)\text{Subst}\left(\int \frac{1}{a+2bx+ax^2}\,dx,x,\tan\left(\frac{1}{2}(c+d
\end{aligned}
$$

$$
= -\frac{x}{b}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}-\frac{\left(4\left(\frac{a}{b}-\frac{b}{a}\right)\right)\text{Subst}\left(\int \frac{1}{-4\left(a^2-b^2\right)-x^2}\,dx,x,2b+2a\tan
$$

$$
= -\frac{x}{b}+\frac{2\sqrt{a^2-b^2}\,\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{abd}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}
$$

Mathematica [A] time = 0.13, size = 90, normalized size = 1.20

$$-\frac{-2\sqrt{a^2-b^2}\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)+ac+adx-b\log\left(\sin\left(\frac{1}{2}(c+dx)\right)\right)+b\log\left(\cos\left(\frac{1}{2}(c+dx)\right)\right)}{abd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cos[c + d*x]*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -((a*c + a*d*x - 2*Sqrt[a^2 - b^2]*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2
 - b^2]] + b*Log[Cos[(c + d*x)/2]] - b*Log[Sin[(c + d*x)/2]])/(a*b*d))
```

fricas [A] time = 0.54, size = 262, normalized size = 3.49

$$\left[-\frac{2\,adx+b\log\left(\frac{1}{2}\cos\left(dx+c\right)+\frac{1}{2}\right)-b\log\left(-\frac{1}{2}\cos\left(dx+c\right)+\frac{1}{2}\right)-\sqrt{-a^2+b^2}\log\left(-\frac{\left(2\,a^2-b^2\right)\cos(dx+c)^2-2\,ab\sin(dx\cdots}{b^2\,\mathrm{co}\cdots}\right.}{2\,abd}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] [-1/2*(2*a*d*x + b*log(1/2*cos(d*x + c) + 1/2) - b*log(-1/2*cos(d*x + c) +
1/2) - sqrt(-a^2 + b^2)*log(-((2*a^2 - b^2)*cos(d*x + c)^2 - 2*a*b*sin(d*x
+ c) - a^2 - b^2 - 2*(a*cos(d*x + c)*sin(d*x + c) + b*cos(d*x + c))*sqrt(-a
^2 + b^2))/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2)))/(a*b*d),
 -1/2*(2*a*d*x + b*log(1/2*cos(d*x + c) + 1/2) - b*log(-1/2*cos(d*x + c) +
1/2) + 2*sqrt(a^2 - b^2)*arctan(-(a*sin(d*x + c) + b)/(sqrt(a^2 - b^2)*cos(
d*x + c))))/(a*b*d)]
```

giac [A] time = 3.34, size = 94, normalized size = 1.25

$$-\frac{\frac{dx+c}{b}-\frac{\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right|\right)}{a}-\frac{2\left(\pi\left\lfloor\frac{dx+c}{2\,\pi}+\frac{1}{2}\right\rfloor\mathrm{sgn}(a)+\arctan\left(\frac{a\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+b}{\sqrt{a^2-b^2}}\right)\right)\sqrt{a^2-b^2}}{ab}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -((d*x + c)/b - log(abs(tan(1/2*d*x + 1/2*c)))/a - 2*(pi*floor(1/2*(d*x + c
)/pi + 1/2)*sgn(a) + arctan((a*tan(1/2*d*x + 1/2*c) + b)/sqrt(a^2 - b^2)))*
sqrt(a^2 - b^2)/(a*b))/d
```

maple [A] time = 0.17, size = 137, normalized size = 1.83

$$\frac{2a\arctan\left(\frac{2a\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+2b}{2\sqrt{a^2-b^2}}\right)}{db\sqrt{a^2-b^2}}-\frac{2b\arctan\left(\frac{2a\tan\left(\frac{dx}{2}+\frac{c}{2}\right)+2b}{2\sqrt{a^2-b^2}}\right)}{da\sqrt{a^2-b^2}}-\frac{2\arctan\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{db}+\frac{\ln\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] 2/d/b*a/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)/(a^2-b^2)^(
1/2))-2/d*b/a/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)/(a^2-
b^2)^(1/2))-2/d/b*arctan(tan(1/2*d*x+1/2*c))+1/a/d*ln(tan(1/2*d*x+1/2*c))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [B] time = 5.39, size = 896, normalized size = 11.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*cot(c + d*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] log(tan(c/2 + (d*x)/2))/(a*d) + (2*atan((64*a^3)/(64*a^2*b - 64*b^3 + 64*a^
3*tan(c/2 + (d*x)/2) - 64*a*b^2*tan(c/2 + (d*x)/2)) - (64*a*b^2)/(64*a^2*b
- 64*b^3 + 64*a^3*tan(c/2 + (d*x)/2) - 64*a*b^2*tan(c/2 + (d*x)/2)) + (64*b
^3*tan(c/2 + (d*x)/2))/(64*a^2*b - 64*b^3 + 64*a^3*tan(c/2 + (d*x)/2) - 64*
a*b^2*tan(c/2 + (d*x)/2)) - (64*a^2*b*tan(c/2 + (d*x)/2))/(64*a^2*b - 64*b^
3 + 64*a^3*tan(c/2 + (d*x)/2) - 64*a*b^2*tan(c/2 + (d*x)/2))))/(b*d) - (2*a
tanh((64*a^2*(b^2 - a^2)^(1/2))/(256*a^2*b - 768*b^3 + (512*b^5)/a^2 - 64*a
^3*tan(c/2 + (d*x)/2) + 832*a*b^2*tan(c/2 + (d*x)/2) - (1792*b^4*tan(c/2 +
(d*x)/2))/a + (1024*b^6*tan(c/2 + (d*x)/2))/a^3) - (512*b^2*(b^2 - a^2)^(1/
2))/(256*a^2*b - 768*b^3 + (512*b^5)/a^2 - 64*a^3*tan(c/2 + (d*x)/2) + 832*
a*b^2*tan(c/2 + (d*x)/2) - (1792*b^4*tan(c/2 + (d*x)/2))/a + (1024*b^6*tan(
```

```
c/2 + (d*x)/2))/a^3) + (512*b^4*(b^2 - a^2)^(1/2))/(256*a^4*b + 512*b^5 - 7
68*a^2*b^3 - 64*a^5*tan(c/2 + (d*x)/2) - 1792*a*b^4*tan(c/2 + (d*x)/2) + 83
2*a^3*b^2*tan(c/2 + (d*x)/2) + (1024*b^6*tan(c/2 + (d*x)/2))/a) - (1280*b^3
*tan(c/2 + (d*x)/2)*(b^2 - a^2)^(1/2))/(256*a^3*b - 768*a*b^3 + (512*b^5)/a
 - 64*a^4*tan(c/2 + (d*x)/2) - 1792*b^4*tan(c/2 + (d*x)/2) + 832*a^2*b^2*ta
n(c/2 + (d*x)/2) + (1024*b^6*tan(c/2 + (d*x)/2))/a^2) + (1024*b^5*tan(c/2 +
 (d*x)/2)*(b^2 - a^2)^(1/2))/(512*a*b^5 + 256*a^5*b - 768*a^3*b^3 - 64*a^6*
tan(c/2 + (d*x)/2) + 1024*b^6*tan(c/2 + (d*x)/2) - 1792*a^2*b^4*tan(c/2 + (
d*x)/2) + 832*a^4*b^2*tan(c/2 + (d*x)/2)) + (320*a*b*tan(c/2 + (d*x)/2)*(b^
2 - a^2)^(1/2))/(256*a^2*b - 768*b^3 + (512*b^5)/a^2 - 64*a^3*tan(c/2 + (d*
x)/2) + 832*a*b^2*tan(c/2 + (d*x)/2) - (1792*b^4*tan(c/2 + (d*x)/2))/a + (1
024*b^6*tan(c/2 + (d*x)/2))/a^3))*(b^2 - a^2)^(1/2))/(a*b*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cos(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral(cos(c + d*x)*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.329 $\int \frac{(e+fx)^3\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=763

$$\frac{6if^3\left(a^2-b^2\right)\text{Li}_4\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^2d^4}+\frac{6if^3\left(a^2-b^2\right)\text{Li}_4\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{ab^2d^4}+\frac{6f^2\left(a^2-b^2\right)(e+fx)\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^2d^3}+\frac{6f^2\left(a^2-b\right.}{}$$

```
[Out] 6*I*(a^2-b^2)*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/b^2/d
^4-3*I*(a^2-b^2)*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2
)))/a/b^2/d^2+6*f^3*cos(d*x+c)/b/d^4-3*f*(f*x+e)^2*cos(d*x+c)/b/d^2+(f*x+e)
^3*ln(1-exp(2*I*(d*x+c)))/a/d+(a^2-b^2)*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(
a-(a^2-b^2)^(1/2)))/a/b^2/d+(a^2-b^2)*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+
(a^2-b^2)^(1/2)))/a/b^2/d+6*I*(a^2-b^2)*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a
-(a^2-b^2)^(1/2)))/a/b^2/d^4-1/4*I*(a^2-b^2)*(f*x+e)^4/a/b^2/f-3*I*(a^2-b^2
)*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^2/d^2+3
/2*f^2*(f*x+e)*polylog(3,exp(2*I*(d*x+c)))/a/d^3+6*(a^2-b^2)*f^2*(f*x+e)*po
lylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^2/d^3+6*(a^2-b^2)*f^2*(
f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/b^2/d^3-1/4*I*(f
*x+e)^4/a/f+3/4*I*f^3*polylog(4,exp(2*I*(d*x+c)))/a/d^4-3/2*I*f*(f*x+e)^2*p
olylog(2,exp(2*I*(d*x+c)))/a/d^2+6*f^2*(f*x+e)*sin(d*x+c)/b/d^3-(f*x+e)^3*s
in(d*x+c)/b/d
```

Rubi [A] time = 1.36, antiderivative size = 763, normalized size of antiderivative = 1.00, number of steps used = 34, number of rules used = 17, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4543, 4408, 4404, 3311, 32, 2635, 8, 3717, 2190, 2531, 6609, 2282, 6589, 4525, 3296, 2638, 4519}

$$\frac{6f^2\left(a^2-b^2\right)(e+fx)\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^2d^3}+\frac{6f^2\left(a^2-b^2\right)(e+fx)\text{PolyLog}\left(3,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{ab^2d^3}-\frac{3if\left(a^2-b^2\right)(e+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x]^2*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I/4)*(e + f*x)^4)/(a*f) - ((I/4)*(a^2 - b^2)*(e + f*x)^4)/(a*b^2*f) + (6
*f^3*Cos[c + d*x])/(b*d^4) - (3*f*(e + f*x)^2*Cos[c + d*x])/(b*d^2) + ((a^2
 - b^2)*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(
a*b^2*d) + ((a^2 - b^2)*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt
[a^2 - b^2])])/(a*b^2*d) + ((e + f*x)^3*Log[1 - E^((2*I)*(c + d*x))])/(a*d)
 - ((3*I)*(a^2 - b^2)*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - S
qrt[a^2 - b^2])])/(a*b^2*d^2) - ((3*I)*(a^2 - b^2)*f*(e + f*x)^2*PolyLog[2,
 (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b^2*d^2) - (((3*I)/2)*f*(
```

```
e + f*x)^2*PolyLog[2, E^((2*I)*(c + d*x))])/(a*d^2) + (6*(a^2 - b^2)*f^2*(e
 + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b^2*d^3
) + (6*(a^2 - b^2)*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt
[a^2 - b^2])])/(a*b^2*d^3) + (3*f^2*(e + f*x)*PolyLog[3, E^((2*I)*(c + d*x)
)])/(2*a*d^3) + ((6*I)*(a^2 - b^2)*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a
- Sqrt[a^2 - b^2])])/(a*b^2*d^4) + ((6*I)*(a^2 - b^2)*f^3*PolyLog[4, (I*b*E
^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b^2*d^4) + (((3*I)/4)*f^3*PolyLo
g[4, E^((2*I)*(c + d*x))])/(a*d^4) + (6*f^2*(e + f*x)*Sin[c + d*x])/(b*d^3)
 - ((e + f*x)^3*Sin[c + d*x])/(b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
```

```
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\cos^2(c+dx)\cot(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cos^3(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^3\cot(c+dx)\,dx}{a} - \frac{\int (e+fx)^3\cos(c+dx)\,dx}{b} + \left(\frac{a}{b}-\frac{b}{a}\right)\int$$

$$= -\frac{i(e+fx)^4}{4af} - \frac{i\left(a^2-b^2\right)(e+fx)^4}{4ab^2f} - \frac{(e+fx)^3\sin(c+dx)}{bd} - \frac{(2i)\int \frac{e}{}}{}$$

$$= -\frac{i(e+fx)^4}{4af} - \frac{i\left(a^2-b^2\right)(e+fx)^4}{4ab^2f} - \frac{3f(e+fx)^2\cos(c+dx)}{bd^2} + \frac{\left(a^2\right.}{}$$

$$= -\frac{i(e+fx)^4}{4af} - \frac{i\left(a^2-b^2\right)(e+fx)^4}{4ab^2f} - \frac{3f(e+fx)^2\cos(c+dx)}{bd^2} + \frac{\left(a^2\right.}{}$$

$$= -\frac{i(e+fx)^4}{4af} - \frac{i\left(a^2-b^2\right)(e+fx)^4}{4ab^2f} + \frac{6f^3\cos(c+dx)}{bd^4} - \frac{3f(e+fx)^2}{bd}$$

$$= -\frac{i(e+fx)^4}{4af} - \frac{i\left(a^2-b^2\right)(e+fx)^4}{4ab^2f} + \frac{6f^3\cos(c+dx)}{bd^4} - \frac{3f(e+fx)^2}{bd}$$

$$= -\frac{i(e+fx)^4}{4af} - \frac{i\left(a^2-b^2\right)(e+fx)^4}{4ab^2f} + \frac{6f^3\cos(c+dx)}{bd^4} - \frac{3f(e+fx)^2}{bd}$$

Mathematica [B] time = 10.75, size = 4014, normalized size = 5.26

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x]^2*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/2*(e*E^(I*c)*f^2*Csc[c]*((2*d^3*x^3)/E^((2*I)*c) + (3*I)*d^2*(1 - E^((-2
*I)*c))*x^2*Log[1 - E^((-I)*(c + d*x))] + (3*I)*d^2*(1 - E^((-2*I)*c))*x^2*
Log[1 + E^((-I)*(c + d*x))] - (6*(-1 + E^((2*I)*c))*(d*x*PolyLog[2, -E^((-I
)*(c + d*x))] - I*PolyLog[3, -E^((-I)*(c + d*x))]))/E^((2*I)*c) - (6*(-1 +
E^((2*I)*c))*(d*x*PolyLog[2, E^((-I)*(c + d*x))] - I*PolyLog[3, E^((-I)*(c
+ d*x))]))/E^((2*I)*c)))/(a*d^3) - (E^(I*c)*f^3*Csc[c]*((d^4*x^4)/E^((2*I)*
c) + (2*I)*d^3*(1 - E^((-2*I)*c))*x^3*Log[1 - E^((-I)*(c + d*x))] + (2*I)*d
^3*(1 - E^((-2*I)*c))*x^3*Log[1 + E^((-I)*(c + d*x))] - (6*(-1 + E^((2*I)*c
```

```
))*(d^2*x^2*PolyLog[2, -E^((-I)*(c + d*x))] - (2*I)*d*x*PolyLog[3, -E^((-I)
*(c + d*x))] - 2*PolyLog[4, -E^((-I)*(c + d*x))]))/E^((2*I)*c) - (6*(-1 + E
^((2*I)*c))*(d^2*x^2*PolyLog[2, E^((-I)*(c + d*x))] - (2*I)*d*x*PolyLog[3,
E^((-I)*(c + d*x))] - 2*PolyLog[4, E^((-I)*(c + d*x))]))/E^((2*I)*c)))/(4*a
*d^4) + ((a^2 - b^2)*((-4*I)*d^4*e^3*E^((2*I)*c)*x - (6*I)*d^4*e^2*E^((2*I)
*c)*f*x^2 - (4*I)*d^4*e*E^((2*I)*c)*f^2*x^3 - I*d^4*E^((2*I)*c)*f^3*x^4 - (
2*I)*d^3*e^3*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c + d*x))))] +
 (2*I)*d^3*e^3*E^((2*I)*c)*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(
c + d*x))))] - d^3*e^3*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(
c + d*x)))^2] + d^3*e^3*E^((2*I)*c)*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1
 + E^((2*I)*(c + d*x)))^2] - 6*d^3*e^2*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I
*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e^2*E^((2*I)*c)*f*x*L
og[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])
] - 6*d^3*e*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2
 + b^2)*E^((2*I)*c)])] + 6*d^3*e*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c +
 d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 2*d^3*f^3*x^3*Log
[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])]
+ 2*d^3*E^((2*I)*c)*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sq
rt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^3*e^2*f*x*Log[1 + (b*E^(I*(2*c + d*x))
)/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e^2*E^((2*I)*c)*f
*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*
c)])] - 6*d^3*e*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(
-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2
*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 2*d^3*f^3*x^3
*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)
])] + 2*d^3*E^((2*I)*c)*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c)
+ Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - (6*I)*d^2*(-1 + E^((2*I)*c))*f*(e + f*
x)^2*PolyLog[2, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^
((2*I)*c)])] - (6*I)*d^2*(-1 + E^((2*I)*c))*f*(e + f*x)^2*PolyLog[2, -((b*E
^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] - 12*d*e
*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^
((2*I)*c)])] + 12*d*e*E^((2*I)*c)*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a
*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*d*f^3*x*PolyLog[3, (I*b*
E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*d*E
^((2*I)*c)*f^3*x*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a
^2 + b^2)*E^((2*I)*c)])] - 12*d*e*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I
*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + 12*d*e*E^((2*I)*c)*f^2*Pol
yLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c
)]))] - 12*d*f^3*x*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(
-a^2 + b^2)*E^((2*I)*c)]))] + 12*d*E^((2*I)*c)*f^3*x*PolyLog[3, -((b*E^(I*(
2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] - (12*I)*f^3*
PolyLog[4, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I
)*c)])] + (12*I)*E^((2*I)*c)*f^3*PolyLog[4, (I*b*E^(I*(2*c + d*x)))/(a*E^(I
*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - (12*I)*f^3*PolyLog[4, -((b*E^(I*
(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + (12*I)*E^(
```

```
(2*I)*c)*f^3*PolyLog[4, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 +
 b^2)*E^((2*I)*c)]))]))/(2*a*b^2*d^4*(-1 + E^((2*I)*c))) + (e^3*Csc[c]*(-(d
*x*Cos[c]) + Log[Cos[d*x]*Sin[c] + Cos[c]*Sin[d*x]]*Sin[c]))/(a*d*(Cos[c]^2
 + Sin[c]^2)) + Csc[c]*(Cos[c + d*x]/(8*b^2*d^4) - ((I/8)*Sin[c + d*x])/(b^
2*d^4))*(4*a*d^4*e^3*x*Cos[d*x] + 6*a*d^4*e^2*f*x^2*Cos[d*x] + 4*a*d^4*e*f^
2*x^3*Cos[d*x] + a*d^4*f^3*x^4*Cos[d*x] + 4*a*d^4*e^3*x*Cos[2*c + d*x] + 6*
a*d^4*e^2*f*x^2*Cos[2*c + d*x] + 4*a*d^4*e*f^2*x^3*Cos[2*c + d*x] + a*d^4*f
^3*x^4*Cos[2*c + d*x] - 2*b*d^3*e^3*Cos[c + 2*d*x] - (6*I)*b*d^2*e^2*f*Cos[
c + 2*d*x] + 12*b*d*e*f^2*Cos[c + 2*d*x] + (12*I)*b*f^3*Cos[c + 2*d*x] - 6*
b*d^3*e^2*f*x*Cos[c + 2*d*x] - (12*I)*b*d^2*e*f^2*x*Cos[c + 2*d*x] + 12*b*d
*f^3*x*Cos[c + 2*d*x] - 6*b*d^3*e*f^2*x^2*Cos[c + 2*d*x] - (6*I)*b*d^2*f^3*
x^2*Cos[c + 2*d*x] - 2*b*d^3*f^3*x^3*Cos[c + 2*d*x] + 2*b*d^3*e^3*Cos[3*c +
 2*d*x] + (6*I)*b*d^2*e^2*f*Cos[3*c + 2*d*x] - 12*b*d*e*f^2*Cos[3*c + 2*d*x
] - (12*I)*b*f^3*Cos[3*c + 2*d*x] + 6*b*d^3*e^2*f*x*Cos[3*c + 2*d*x] + (12*
I)*b*d^2*e*f^2*x*Cos[3*c + 2*d*x] - 12*b*d*f^3*x*Cos[3*c + 2*d*x] + 6*b*d^3
*e*f^2*x^2*Cos[3*c + 2*d*x] + (6*I)*b*d^2*f^3*x^2*Cos[3*c + 2*d*x] + 2*b*d^
3*f^3*x^3*Cos[3*c + 2*d*x] - (4*I)*b*d^3*e^3*Sin[c] - 12*b*d^2*e^2*f*Sin[c]
 + (24*I)*b*d*e*f^2*Sin[c] + 24*b*f^3*Sin[c] - (12*I)*b*d^3*e^2*f*x*Sin[c]
- 24*b*d^2*e*f^2*x*Sin[c] + (24*I)*b*d*f^3*x*Sin[c] - (12*I)*b*d^3*e*f^2*x^
2*Sin[c] - 12*b*d^2*f^3*x^2*Sin[c] - (4*I)*b*d^3*f^3*x^3*Sin[c] + (4*I)*a*d
^4*e^3*x*Sin[d*x] + (6*I)*a*d^4*e^2*f*x^2*Sin[d*x] + (4*I)*a*d^4*e*f^2*x^3*
Sin[d*x] + I*a*d^4*f^3*x^4*Sin[d*x] + (4*I)*a*d^4*e^3*x*Sin[2*c + d*x] + (6
*I)*a*d^4*e^2*f*x^2*Sin[2*c + d*x] + (4*I)*a*d^4*e*f^2*x^3*Sin[2*c + d*x] +
 I*a*d^4*f^3*x^4*Sin[2*c + d*x] - (2*I)*b*d^3*e^3*Sin[c + 2*d*x] + 6*b*d^2*
e^2*f*Sin[c + 2*d*x] + (12*I)*b*d*e*f^2*Sin[c + 2*d*x] - 12*b*f^3*Sin[c + 2
*d*x] - (6*I)*b*d^3*e^2*f*x*Sin[c + 2*d*x] + 12*b*d^2*e*f^2*x*Sin[c + 2*d*x
] + (12*I)*b*d*f^3*x*Sin[c + 2*d*x] - (6*I)*b*d^3*e*f^2*x^2*Sin[c + 2*d*x]
+ 6*b*d^2*f^3*x^2*Sin[c + 2*d*x] - (2*I)*b*d^3*f^3*x^3*Sin[c + 2*d*x] + (2*
I)*b*d^3*e^3*Sin[3*c + 2*d*x] - 6*b*d^2*e^2*f*Sin[3*c + 2*d*x] - (12*I)*b*d
*e*f^2*Sin[3*c + 2*d*x] + 12*b*f^3*Sin[3*c + 2*d*x] + (6*I)*b*d^3*e^2*f*x*S
in[3*c + 2*d*x] - 12*b*d^2*e*f^2*x*Sin[3*c + 2*d*x] - (12*I)*b*d*f^3*x*Sin[
3*c + 2*d*x] + (6*I)*b*d^3*e*f^2*x^2*Sin[3*c + 2*d*x] - 6*b*d^2*f^3*x^2*Sin
[3*c + 2*d*x] + (2*I)*b*d^3*f^3*x^3*Sin[3*c + 2*d*x]) - (3*e^2*f*Csc[c]*Sec
[c]*(d^2*E^(I*ArcTan[Tan[c]])*x^2 + ((I*d*x*(-Pi + 2*ArcTan[Tan[c]]) - Pi*L
og[1 + E^((-2*I)*d*x)] - 2*(d*x + ArcTan[Tan[c]])*Log[1 - E^((2*I)*(d*x + A
rcTan[Tan[c]]))] + Pi*Log[Cos[d*x]] + 2*ArcTan[Tan[c]]*Log[Sin[d*x + ArcTan
[Tan[c]]]] + I*PolyLog[2, E^((2*I)*(d*x + ArcTan[Tan[c]]))])*Tan[c])/Sqrt[1
 + Tan[c]^2]))/(2*a*d^2*Sqrt[Sec[c]^2*(Cos[c]^2 + Sin[c]^2)])
```

fricas [C] time = 0.94, size = 3461, normalized size = 4.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
```

fricas")

```
[Out] 1/2*(6*I*b^2*f^3*polylog(4, cos(d*x + c) + I*sin(d*x + c)) - 6*I*b^2*f^3*po
lylog(4, cos(d*x + c) - I*sin(d*x + c)) - 6*I*b^2*f^3*polylog(4, -cos(d*x +
 c) + I*sin(d*x + c)) + 6*I*b^2*f^3*polylog(4, -cos(d*x + c) - I*sin(d*x +
c)) + 6*I*(a^2 - b^2)*f^3*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x
+ c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6
*I*(a^2 - b^2)*f^3*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) -
2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*I*(a^2
 - b^2)*f^3*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*c
os(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*I*(a^2 - b^2
)*f^3*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x
 + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*(a*b*d^2*f^3*x^2 +
 2*a*b*d^2*e*f^2*x + a*b*d^2*e^2*f - 2*a*b*f^3)*cos(d*x + c) + (3*I*(a^2 -
b^2)*d^2*f^3*x^2 + 6*I*(a^2 - b^2)*d^2*e*f^2*x + 3*I*(a^2 - b^2)*d^2*e^2*f)
*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*
b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (3*I*(a^2 - b^2)*d^2
*f^3*x^2 + 6*I*(a^2 - b^2)*d^2*e*f^2*x + 3*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-
1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*
x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-3*I*(a^2 - b^2)*d^2*f^3*x^
2 - 6*I*(a^2 - b^2)*d^2*e*f^2*x - 3*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-1/2*(-2
*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-3*I*(a^2 - b^2)*d^2*f^3*x^2 - 6*
I*(a^2 - b^2)*d^2*e*f^2*x - 3*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-1/2*(-2*I*a*c
os(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-3*I*b^2*d^2*f^3*x^2 - 6*I*b^2*d^2*e*f^
2*x - 3*I*b^2*d^2*e^2*f)*dilog(cos(d*x + c) + I*sin(d*x + c)) + (3*I*b^2*d^
2*f^3*x^2 + 6*I*b^2*d^2*e*f^2*x + 3*I*b^2*d^2*e^2*f)*dilog(cos(d*x + c) - I
*sin(d*x + c)) + (3*I*b^2*d^2*f^3*x^2 + 6*I*b^2*d^2*e*f^2*x + 3*I*b^2*d^2*e
^2*f)*dilog(-cos(d*x + c) + I*sin(d*x + c)) + (-3*I*b^2*d^2*f^3*x^2 - 6*I*b
^2*d^2*e*f^2*x - 3*I*b^2*d^2*e^2*f)*dilog(-cos(d*x + c) - I*sin(d*x + c)) +
 ((a^2 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2*e^2*f + 3*(a^2 - b^2)*c^2*d*e*f
^2 - (a^2 - b^2)*c^3*f^3)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*s
qrt(-(a^2 - b^2)/b^2) + 2*I*a) + ((a^2 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2
*e^2*f + 3*(a^2 - b^2)*c^2*d*e*f^2 - (a^2 - b^2)*c^3*f^3)*log(2*b*cos(d*x +
 c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + ((a^2 - b^
2)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2*e^2*f + 3*(a^2 - b^2)*c^2*d*e*f^2 - (a^2 -
 b^2)*c^3*f^3)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2
- b^2)/b^2) + 2*I*a) + ((a^2 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2*e^2*f + 3
*(a^2 - b^2)*c^2*d*e*f^2 - (a^2 - b^2)*c^3*f^3)*log(-2*b*cos(d*x + c) - 2*I
*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + ((a^2 - b^2)*d^3*f^
3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + 3*(a^2 -
b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)*c^2*d*e*f^2 + (a^2 - b^2)*c^3*f^3)*log(1/2
*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + ((a^2 - b^2)*d^3*f^3*x^3 + 3*(a^2 -
```

```
b^2)*d^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + 3*(a^2 - b^2)*c*d^2*e^2*f
 - 3*(a^2 - b^2)*c^2*d*e*f^2 + (a^2 - b^2)*c^3*f^3)*log(1/2*(2*I*a*cos(d*x
+ c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2
- b^2)/b^2) + 2*b)/b) + ((a^2 - b^2)*d^3*f^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*
x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + 3*(a^2 - b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)
*c^2*d*e*f^2 + (a^2 - b^2)*c^3*f^3)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(
d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2
*b)/b) + ((a^2 - b^2)*d^3*f^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*x^2 + 3*(a^2 -
b^2)*d^3*e^2*f*x + 3*(a^2 - b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)*c^2*d*e*f^2 +
(a^2 - b^2)*c^3*f^3)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b
*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + (b^2*d
^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x + b^2*d^3*e^3)*log(cos
(d*x + c) + I*sin(d*x + c) + 1) + (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 +
3*b^2*d^3*e^2*f*x + b^2*d^3*e^3)*log(cos(d*x + c) - I*sin(d*x + c) + 1) + (
b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*log(-1/2
*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) + (b^2*d^3*e^3 - 3*b^2*c*d^2*e^2*
f + 3*b^2*c^2*d*e*f^2 - b^2*c^3*f^3)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x
+ c) + 1/2) + (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*f*x +
3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*log(-cos(d*x + c) + I*
sin(d*x + c) + 1) + (b^2*d^3*f^3*x^3 + 3*b^2*d^3*e*f^2*x^2 + 3*b^2*d^3*e^2*
f*x + 3*b^2*c*d^2*e^2*f - 3*b^2*c^2*d*e*f^2 + b^2*c^3*f^3)*log(-cos(d*x + c
) - I*sin(d*x + c) + 1) + 6*((a^2 - b^2)*d*f^3*x + (a^2 - b^2)*d*e*f^2)*pol
ylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*
b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6*((a^2 - b^2)*d*f^3*x + (a^2
- b^2)*d*e*f^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(
b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 6*((a^2 - b
^2)*d*f^3*x + (a^2 - b^2)*d*e*f^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*
a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2))/b) + 6*((a^2 - b^2)*d*f^3*x + (a^2 - b^2)*d*e*f^2)*polylog(3, 1/2*(-2*I
*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*
sqrt(-(a^2 - b^2)/b^2))/b) + 6*(b^2*d*f^3*x + b^2*d*e*f^2)*polylog(3, cos(d
*x + c) + I*sin(d*x + c)) + 6*(b^2*d*f^3*x + b^2*d*e*f^2)*polylog(3, cos(d*
x + c) - I*sin(d*x + c)) + 6*(b^2*d*f^3*x + b^2*d*e*f^2)*polylog(3, -cos(d*
x + c) + I*sin(d*x + c)) + 6*(b^2*d*f^3*x + b^2*d*e*f^2)*polylog(3, -cos(d*
x + c) - I*sin(d*x + c)) - 2*(a*b*d^3*f^3*x^3 + 3*a*b*d^3*e*f^2*x^2 + a*b*d
^3*e^3 - 6*a*b*d*e*f^2 + 3*(a*b*d^3*e^2*f - 2*a*b*d*f^3)*x)*sin(d*x + c))/(
a*b^2*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

maple [F] time = 8.40, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\cos^{2}\left(dx+c\right)\right) \cot\left(dx+c\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*cot(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{3} \cos^{2}\left(c+dx\right) \cot\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)**2*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*cos(c + d*x)**2*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.330 $\int \frac{(e+fx)^2 \cos^2(c+dx) \cot(c+dx)}{a+b \sin(c+dx)} dx$

Optimal. Leaf size=566

$$\frac{2f^2\left(a^2-b^2\right)\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^2d^3}+\frac{2f^2\left(a^2-b^2\right)\text{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{ab^2d^3}-\frac{2if\left(a^2-b^2\right)(e+fx)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^2d^2}-\frac{2if\left(a^2-b^2\right)}{}$$

```
[Out] -1/3*I*(f*x+e)^3/a/f-1/3*I*(a^2-b^2)*(f*x+e)^3/a/b^2/f-2*f*(f*x+e)*cos(d*x+
c)/b/d^2+(f*x+e)^2*ln(1-exp(2*I*(d*x+c)))/a/d+(a^2-b^2)*(f*x+e)^2*ln(1-I*b*
exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^2/d+(a^2-b^2)*(f*x+e)^2*ln(1-I*b*ex
p(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/b^2/d-I*f*(f*x+e)*polylog(2,exp(2*I*(d*
x+c)))/a/d^2-2*I*(a^2-b^2)*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b
^2)^(1/2)))/a/b^2/d^2-2*I*(a^2-b^2)*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/
(a+(a^2-b^2)^(1/2)))/a/b^2/d^2+1/2*f^2*polylog(3,exp(2*I*(d*x+c)))/a/d^3+2*
(a^2-b^2)*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^2/d^3+2
*(a^2-b^2)*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/b^2/d^3+
2*f^2*sin(d*x+c)/b/d^3-(f*x+e)^2*sin(d*x+c)/b/d
```

Rubi [A] time = 1.12, antiderivative size = 566, normalized size of antiderivative = 1.00, number of steps used = 26, number of rules used = 13, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.382, Rules used = {4543, 4408, 4404, 3310, 3717, 2190, 2531, 2282, 6589, 4525, 3296, 2637, 4519}

$$-\frac{2if\left(a^2-b^2\right)(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^2d^2}-\frac{2if\left(a^2-b^2\right)(e+fx)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{ab^2d^2}+\frac{2f^2\left(a^2-b^2\right)\text{Poly}}{ab}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x]^2*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I/3)*(e + f*x)^3)/(a*f) - ((I/3)*(a^2 - b^2)*(e + f*x)^3)/(a*b^2*f) - (2
*f*(e + f*x)*Cos[c + d*x])/(b*d^2) + ((a^2 - b^2)*(e + f*x)^2*Log[1 - (I*b*
E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b^2*d) + ((a^2 - b^2)*(e + f*x)
^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b^2*d) + ((e +
f*x)^2*Log[1 - E^((2*I)*(c + d*x))])/(a*d) - ((2*I)*(a^2 - b^2)*f*(e + f*x)
*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b^2*d^2) - ((2
*I)*(a^2 - b^2)*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2
- b^2])])/(a*b^2*d^2) - (I*f*(e + f*x)*PolyLog[2, E^((2*I)*(c + d*x))])/(a*
d^2) + (2*(a^2 - b^2)*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 -
b^2])])/(a*b^2*d^3) + (2*(a^2 - b^2)*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(
a + Sqrt[a^2 - b^2])])/(a*b^2*d^3) + (f^2*PolyLog[3, E^((2*I)*(c + d*x))])/
(2*a*d^3) + (2*f^2*Sin[c + d*x])/(b*d^3) - ((e + f*x)^2*Sin[c + d*x])/(b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
```

```
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\cos^2(c+dx)\cot(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cos^3(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^2\cot(c+dx)\,dx}{a} - \frac{\int (e+fx)^2\cos(c+dx)\,dx}{b} + \left(\frac{a}{b}-\frac{b}{a}\right)\int$$

$$= -\frac{i(e+fx)^3}{3af} - \frac{i\left(a^2-b^2\right)(e+fx)^3}{3ab^2f} - \frac{(e+fx)^2\sin(c+dx)}{bd} - \frac{(2i)\int}{}$$

$$= -\frac{i(e+fx)^3}{3af} - \frac{i\left(a^2-b^2\right)(e+fx)^3}{3ab^2f} - \frac{2f(e+fx)\cos(c+dx)}{bd^2} + \frac{\left(a^2-\right.}{}$$

$$= -\frac{i(e+fx)^3}{3af} - \frac{i\left(a^2-b^2\right)(e+fx)^3}{3ab^2f} - \frac{2f(e+fx)\cos(c+dx)}{bd^2} + \frac{\left(a^2-\right.}{}$$

$$= -\frac{i(e+fx)^3}{3af} - \frac{i\left(a^2-b^2\right)(e+fx)^3}{3ab^2f} - \frac{2f(e+fx)\cos(c+dx)}{bd^2} + \frac{\left(a^2-\right.}{}$$

$$= -\frac{i(e+fx)^3}{3af} - \frac{i\left(a^2-b^2\right)(e+fx)^3}{3ab^2f} - \frac{2f(e+fx)\cos(c+dx)}{bd^2} + \frac{\left(a^2-\right.}{}$$

Mathematica [B] time = 9.55, size = 1834, normalized size = 3.24

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x]^2*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/6*(E^(I*c)*f^2*Csc[c]*((2*d^3*x^3)/E^((2*I)*c) + (3*I)*d^2*(1 - E^((-2*I
)*c))*x^2*Log[1 - E^((-I)*(c + d*x))] + (3*I)*d^2*(1 - E^((-2*I)*c))*x^2*Lo
```

```
g[1 + E^((-I)*(c + d*x))] - (6*(-1 + E^((2*I)*c))*(d*x*PolyLog[2, -E^((-I)*
(c + d*x))] - I*PolyLog[3, -E^((-I)*(c + d*x))]))/E^((2*I)*c) - (6*(-1 + E^
((2*I)*c))*(d*x*PolyLog[2, E^((-I)*(c + d*x))] - I*PolyLog[3, E^((-I)*(c +
d*x))]))/E^((2*I)*c)))/(a*d^3) + ((a^2 - b^2)*((-12*I)*d^3*e^2*E^((2*I)*c)*
x - (12*I)*d^3*e*E^((2*I)*c)*f*x^2 - (4*I)*d^3*E^((2*I)*c)*f^2*x^3 - (6*I)*
d^2*e^2*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c + d*x))))] + (6*I
)*d^2*e^2*E^((2*I)*c)*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c + d
*x))))] - 3*d^2*e^2*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c +
 d*x)))^2] + 3*d^2*e^2*E^((2*I)*c)*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1
+ E^((2*I)*(c + d*x)))^2] - 12*d^2*e*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a
*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*d^2*e*E^((2*I)*c)*f*x*Log[
1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] -
 6*d^2*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^
2)*E^((2*I)*c)])] + 6*d^2*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))
/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*d^2*e*f*x*Log[1 + (b*
E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*d^2
*e*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2
+ b^2)*E^((2*I)*c)])] - 6*d^2*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^
(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^2*E^((2*I)*c)*f^2*x^2*Log[1
+ (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - (
12*I)*d*(-1 + E^((2*I)*c))*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(2*c + d*x)))/(
a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - (12*I)*d*(-1 + E^((2*I)*c)
)*f*(e + f*x)*PolyLog[2, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2
+ b^2)*E^((2*I)*c)]))] - 12*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*
c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*E^((2*I)*c)*f^2*PolyLog[3, (I*
b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*f
^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((
2*I)*c)]))] + 12*E^((2*I)*c)*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^
(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))]))/(6*a*b^2*d^3*(-1 + E^((2*I)*c))
) + (a*x*(3*e^2 + 3*e*f*x + f^2*x^2)*Cos[c]*Csc[c/2]*Sec[c/2])/(6*b^2) - (C
os[d*x]*(2*d*e*f*Cos[c] + 2*d*f^2*x*Cos[c] + d^2*e^2*Sin[c] - 2*f^2*Sin[c]
+ 2*d^2*e*f*x*Sin[c] + d^2*f^2*x^2*Sin[c]))/(b*d^3) + (e^2*Csc[c]*(-(d*x*Co
s[c]) + Log[Cos[d*x]*Sin[c] + Cos[c]*Sin[d*x]]*Sin[c]))/(a*d*(Cos[c]^2 + Si
n[c]^2)) - ((d^2*e^2*Cos[c] - 2*f^2*Cos[c] + 2*d^2*e*f*x*Cos[c] + d^2*f^2*x
^2*Cos[c] - 2*d*e*f*Sin[c] - 2*d*f^2*x*Sin[c])*Sin[d*x])/(b*d^3) - (e*f*Csc
[c]*Sec[c]*(d^2*E^(I*ArcTan[Tan[c]])*x^2 + ((I*d*x*(-Pi + 2*ArcTan[Tan[c]])
 - Pi*Log[1 + E^((-2*I)*d*x)] - 2*(d*x + ArcTan[Tan[c]])*Log[1 - E^((2*I)*(
d*x + ArcTan[Tan[c]]))] + Pi*Log[Cos[d*x]] + 2*ArcTan[Tan[c]]*Log[Sin[d*x +
 ArcTan[Tan[c]]]] + I*PolyLog[2, E^((2*I)*(d*x + ArcTan[Tan[c]]))])*Tan[c])
/Sqrt[1 + Tan[c]^2]))/(a*d^2*Sqrt[Sec[c]^2*(Cos[c]^2 + Sin[c]^2)])
```

fricas [C] time = 0.73, size = 2266, normalized size = 4.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
fricas")

[Out] 1/2*(2*b^2*f^2*polylog(3, cos(d*x + c) + I*sin(d*x + c)) + 2*b^2*f^2*polylo
g(3, cos(d*x + c) - I*sin(d*x + c)) + 2*b^2*f^2*polylog(3, -cos(d*x + c) +
I*sin(d*x + c)) + 2*b^2*f^2*polylog(3, -cos(d*x + c) - I*sin(d*x + c)) + 2*
(a^2 - b^2)*f^2*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(
b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(a^2 - b^
2)*f^2*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x
 + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(a^2 - b^2)*f^2*po
lylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) -
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(a^2 - b^2)*f^2*polylog(3,
 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(
d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 4*(a*b*d*f^2*x + a*b*d*e*f)*cos(d*x
+ c) + (2*I*(a^2 - b^2)*d*f^2*x + 2*I*(a^2 - b^2)*d*e*f)*dilog(-1/2*(2*I*a*
cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (2*I*(a^2 - b^2)*d*f^2*x + 2*I*(a^2 - b
^2)*d*e*f)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x
 + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-2*I*(a^2
 - b^2)*d*f^2*x - 2*I*(a^2 - b^2)*d*e*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) +
2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/
b^2) + 2*b)/b + 1) + (-2*I*(a^2 - b^2)*d*f^2*x - 2*I*(a^2 - b^2)*d*e*f)*dil
og(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*s
in(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + (-2*I*b^2*d*f^2*x - 2*I
*b^2*d*e*f)*dilog(cos(d*x + c) + I*sin(d*x + c)) + (2*I*b^2*d*f^2*x + 2*I*b
^2*d*e*f)*dilog(cos(d*x + c) - I*sin(d*x + c)) + (2*I*b^2*d*f^2*x + 2*I*b^2
*d*e*f)*dilog(-cos(d*x + c) + I*sin(d*x + c)) + (-2*I*b^2*d*f^2*x - 2*I*b^2
*d*e*f)*dilog(-cos(d*x + c) - I*sin(d*x + c)) + ((a^2 - b^2)*d^2*e^2 - 2*(a
^2 - b^2)*c*d*e*f + (a^2 - b^2)*c^2*f^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d
*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + ((a^2 - b^2)*d^2*e^2 - 2*(a
^2 - b^2)*c*d*e*f + (a^2 - b^2)*c^2*f^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d
*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + ((a^2 - b^2)*d^2*e^2 - 2*(a
^2 - b^2)*c*d*e*f + (a^2 - b^2)*c^2*f^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(
d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + ((a^2 - b^2)*d^2*e^2 - 2*(
a^2 - b^2)*c*d*e*f + (a^2 - b^2)*c^2*f^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin
(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + ((a^2 - b^2)*d^2*f^2*x^2
+ 2*(a^2 - b^2)*d^2*e*f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*lo
g(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(
d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + ((a^2 - b^2)*d^2*f^2*x^2 + 2*(
a^2 - b^2)*d^2*e*f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(1/2
*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + ((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 -
 b^2)*d^2*e*f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(1/2*(-2*
I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + ((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2
```

```
)*d^2*e*f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(1/2*(-2*I*a*
cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2) + 2*b)/b) + (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + b^2*d^
2*e^2)*log(cos(d*x + c) + I*sin(d*x + c) + 1) + (b^2*d^2*f^2*x^2 + 2*b^2*d^
2*e*f*x + b^2*d^2*e^2)*log(cos(d*x + c) - I*sin(d*x + c) + 1) + (b^2*d^2*e^
2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c)
 + 1/2) + (b^2*d^2*e^2 - 2*b^2*c*d*e*f + b^2*c^2*f^2)*log(-1/2*cos(d*x + c)
 - 1/2*I*sin(d*x + c) + 1/2) + (b^2*d^2*f^2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c
*d*e*f - b^2*c^2*f^2)*log(-cos(d*x + c) + I*sin(d*x + c) + 1) + (b^2*d^2*f^
2*x^2 + 2*b^2*d^2*e*f*x + 2*b^2*c*d*e*f - b^2*c^2*f^2)*log(-cos(d*x + c) -
I*sin(d*x + c) + 1) - 2*(a*b*d^2*f^2*x^2 + 2*a*b*d^2*e*f*x + a*b*d^2*e^2 -
2*a*b*f^2)*sin(d*x + c))/(a*b^2*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

maple [F] time = 7.23, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \left(\cos^{2}\left(dx+c\right)\right) \cot\left(dx+c\right)}{a+b\sin\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*cot(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^{2} \cos^{2}\left(c + dx\right) \cot\left(c + dx\right)}{a + b \sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)**2*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*cos(c + d*x)**2*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.331 $\int \frac{(e+fx)\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=379

$$-\frac{if\left(a^2-b^2\right)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^2d^2}-\frac{if\left(a^2-b^2\right)\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{ab^2d^2}+\frac{\left(a^2-b^2\right)(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^2d}+\frac{\left(a^2-b^2\right)(e+$$

```
[Out] -1/2*I*(f*x+e)^2/a/f-1/2*I*(a^2-b^2)*(f*x+e)^2/a/b^2/f-f*cos(d*x+c)/b/d^2+(
f*x+e)*ln(1-exp(2*I*(d*x+c)))/a/d+(a^2-b^2)*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))
/(a-(a^2-b^2)^(1/2)))/a/b^2/d+(a^2-b^2)*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+
(a^2-b^2)^(1/2)))/a/b^2/d-1/2*I*f*polylog(2,exp(2*I*(d*x+c)))/a/d^2-I*(a^2-
b^2)*f*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^2/d^2-I*(a^2-b
^2)*f*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/b^2/d^2-(f*x+e)*s
in(d*x+c)/b/d
```

Rubi [A] time = 0.63, antiderivative size = 379, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 13, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.406, Rules used = {4543, 4408, 4404, 2635, 8, 3717, 2190, 2279, 2391, 4525, 3296, 2638, 4519}

$$-\frac{if\left(a^2-b^2\right)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^2d^2}-\frac{if\left(a^2-b^2\right)\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{ab^2d^2}-\frac{if\text{PolyLog}\left(2,e^{2i(c+dx)}\right)}{2ad^2}+\frac{\left(a^2-b^2\right)(e$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x]^2*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I/2)*(e + f*x)^2)/(a*f) - ((I/2)*(a^2 - b^2)*(e + f*x)^2)/(a*b^2*f) - (f
*Cos[c + d*x])/(b*d^2) + ((a^2 - b^2)*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)
))/(a - Sqrt[a^2 - b^2])])/(a*b^2*d) + ((a^2 - b^2)*(e + f*x)*Log[1 - (I*b*
E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b^2*d) + ((e + f*x)*Log[1 - E^(
(2*I)*(c + d*x))])/(a*d) - (I*(a^2 - b^2)*f*PolyLog[2, (I*b*E^(I*(c + d*x))
)/(a - Sqrt[a^2 - b^2])])/(a*b^2*d^2) - (I*(a^2 - b^2)*f*PolyLog[2, (I*b*E^
(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b^2*d^2) - ((I/2)*f*PolyLog[2, E^
((2*I)*(c + d*x))])/(a*d^2) - ((e + f*x)*Sin[c + d*x])/(b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
```

```
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
```

```
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\cos^2(c+dx)\cot(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cos^3(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)\cot(c+dx)\,dx}{a} - \frac{\int (e+fx)\cos(c+dx)\,dx}{b} + \left(\frac{a}{b}-\frac{b}{a}\right)\int \frac{(e+}{a+}$$

$$= -\frac{i(e+fx)^2}{2af} - \frac{i\left(a^2-b^2\right)(e+fx)^2}{2ab^2 f} - \frac{(e+fx)\sin(c+dx)}{bd} - \frac{(2i)\int \frac{e^{2i(c+}}{1-e}}{a}$$

$$= -\frac{i(e+fx)^2}{2af} - \frac{i\left(a^2-b^2\right)(e+fx)^2}{2ab^2 f} - \frac{f\cos(c+dx)}{bd^2} + \frac{\left(a^2-b^2\right)(e+fx)}{a}$$

$$= -\frac{i(e+fx)^2}{2af} - \frac{i\left(a^2-b^2\right)(e+fx)^2}{2ab^2 f} - \frac{f\cos(c+dx)}{bd^2} + \frac{\left(a^2-b^2\right)(e+fx)}{a}$$

$$= -\frac{i(e+fx)^2}{2af} - \frac{i\left(a^2-b^2\right)(e+fx)^2}{2ab^2 f} - \frac{f\cos(c+dx)}{bd^2} + \frac{\left(a^2-b^2\right)(e+fx)}{a}$$

Mathematica [B] time = 14.94, size = 2209, normalized size = 5.83

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Cos[c + d*x]^2*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -((f*Cos[c + d*x])/(b*d^2)) + (e*Log[Sin[c + d*x]])/(a*d) - (c*f*Log[Sin[c
+ d*x]])/(a*d^2) + (f*((c + d*x)*Log[1 - E^((2*I)*(c + d*x))] - (I/2)*((c +
 d*x)^2 + PolyLog[2, E^((2*I)*(c + d*x))])))/(a*d^2) - ((d*e - c*f + f*(c +
 d*x))*Sin[c + d*x])/(b*d^2) + ((f*(c + d*x)^2 + (2*I)*d*e*Log[Sec[(c + d*x
)/2]^2] - (2*I)*c*f*Log[Sec[(c + d*x)/2]^2] - (2*I)*d*e*Log[Sec[(c + d*x)/2
]^2*(a + b*Sin[c + d*x])] + (2*I)*c*f*Log[Sec[(c + d*x)/2]^2*(a + b*Sin[c +
 d*x])] - (4*I)*f*(c + d*x)*Log[(-2*I)/(-I + Tan[(c + d*x)/2])] - 2*f*Log[1
 + I*Tan[(c + d*x)/2]]*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a
 + b - Sqrt[-a^2 + b^2])] + 2*f*Log[1 - I*Tan[(c + d*x)/2]]*Log[-((b - Sqrt
[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2]))] + 2*f*Log
[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((
-I)*a + b + Sqrt[-a^2 + b^2])] - 2*f*Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + S
qrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])] + 4*f*P
olyLog[2, -Cos[c + d*x] + I*Sin[c + d*x]] + 2*f*PolyLog[2, (a*(1 - I*Tan[(c
```

```
 + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))] - 2*f*PolyLog[2, (a*(1 + I*Tan
[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))] + 2*f*PolyLog[2, (a*(I + Ta
n[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])] - 2*f*PolyLog[2, (a + I*a*Ta
n[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))])*((a*e*Cos[c + d*x])/(b*(a
 + b*Sin[c + d*x])) - (b*e*Cos[c + d*x])/(a*(a + b*Sin[c + d*x])) - (a*c*f*
Cos[c + d*x])/(b*d*(a + b*Sin[c + d*x])) + (b*c*f*Cos[c + d*x])/(a*d*(a + b
*Sin[c + d*x])) + (a*f*(c + d*x)*Cos[c + d*x])/(b*d*(a + b*Sin[c + d*x])) -
 (b*f*(c + d*x)*Cos[c + d*x])/(a*d*(a + b*Sin[c + d*x]))))/(d*(2*f*(c + d*x
) - (4*I)*f*Log[(-2*I)/(-I + Tan[(c + d*x)/2])] - (4*f*Log[1 + Cos[c + d*x]
 - I*Sin[c + d*x]]*(I*Cos[c + d*x] + Sin[c + d*x]))/(-Cos[c + d*x] + I*Sin[
c + d*x]) + (I*f*Log[1 - (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2
 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) - (I*f*Log[-((b - S
qrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2]))]*Sec[(c
 + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) - (I*f*Log[(b + Sqrt[-a^2 + b^2] + a
*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1
- I*Tan[(c + d*x)/2]) + (I*f*Log[1 - (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b
 + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) - (I*f*
Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2]
)]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) - (I*f*Log[(b + Sqrt[-a^2 +
 b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^
2)/(1 + I*Tan[(c + d*x)/2]) + (2*I)*d*e*Tan[(c + d*x)/2] - (2*I)*c*f*Tan[(c
 + d*x)/2] + ((2*I)*f*(c + d*x)*Sec[(c + d*x)/2]^2)/(-I + Tan[(c + d*x)/2])
 - (f*Log[1 - (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])]*Sec[
(c + d*x)/2]^2)/(I + Tan[(c + d*x)/2]) + (I*a*f*Log[1 - (a + I*a*Tan[(c + d
*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(a + I*a*Tan[(
c + d*x)/2]) + (a*f*Log[1 - I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b - Sq
rt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) - (a*f*Log[1 + I*Tan[(c + d*x)/2]]*Sec
[(c + d*x)/2]^2)/(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) + (a*f*Log[1 -
 I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b + Sqrt[-a^2 + b^2] + a*Tan[(c +
 d*x)/2]) - (a*f*Log[1 + I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b + Sqrt[
-a^2 + b^2] + a*Tan[(c + d*x)/2]) - ((2*I)*d*e*Cos[(c + d*x)/2]^2*(b*Cos[c
+ d*x]*Sec[(c + d*x)/2]^2 + Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c
+ d*x)/2]))/(a + b*Sin[c + d*x]) + ((2*I)*c*f*Cos[(c + d*x)/2]^2*(b*Cos[c +
 d*x]*Sec[(c + d*x)/2]^2 + Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c +
 d*x)/2]))/(a + b*Sin[c + d*x])))
```

<u>fricas</u> [B] time = 0.73, size = 1301, normalized size = 3.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] -1/2*(2*a*b*f*cos(d*x + c) + I*b^2*f*dilog(cos(d*x + c) + I*sin(d*x + c)) -
```

```
 I*b^2*f*dilog(cos(d*x + c) - I*sin(d*x + c)) - I*b^2*f*dilog(-cos(d*x + c)
 + I*sin(d*x + c)) + I*b^2*f*dilog(-cos(d*x + c) - I*sin(d*x + c)) - I*(a^2
 - b^2)*f*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x
+ c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - I*(a^2 - b^
2)*f*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c)
- I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + I*(a^2 - b^2)*f*
dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*
b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + I*(a^2 - b^2)*f*dilo
g(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*si
n(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - ((a^2 - b^2)*d*e - (a^2
- b^2)*c*f)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^
2)/b^2) + 2*I*a) - ((a^2 - b^2)*d*e - (a^2 - b^2)*c*f)*log(2*b*cos(d*x + c)
 - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - ((a^2 - b^2)*
d*e - (a^2 - b^2)*c*f)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqr
t(-(a^2 - b^2)/b^2) + 2*I*a) - ((a^2 - b^2)*d*e - (a^2 - b^2)*c*f)*log(-2*b
*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) -
((a^2 - b^2)*d*f*x + (a^2 - b^2)*c*f)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin
(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) +
2*b)/b) - ((a^2 - b^2)*d*f*x + (a^2 - b^2)*c*f)*log(1/2*(2*I*a*cos(d*x + c)
 + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^
2)/b^2) + 2*b)/b) - ((a^2 - b^2)*d*f*x + (a^2 - b^2)*c*f)*log(1/2*(-2*I*a*c
os(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2) + 2*b)/b) - ((a^2 - b^2)*d*f*x + (a^2 - b^2)*c*f)*log(1/
2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - (b^2*d*f*x + b^2*d*e)*log(cos(d*x
 + c) + I*sin(d*x + c) + 1) - (b^2*d*f*x + b^2*d*e)*log(cos(d*x + c) - I*si
n(d*x + c) + 1) - (b^2*d*e - b^2*c*f)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x
 + c) + 1/2) - (b^2*d*e - b^2*c*f)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x +
c) + 1/2) - (b^2*d*f*x + b^2*c*f)*log(-cos(d*x + c) + I*sin(d*x + c) + 1) -
 (b^2*d*f*x + b^2*c*f)*log(-cos(d*x + c) - I*sin(d*x + c) + 1) + 2*(a*b*d*f
*x + a*b*d*e)*sin(d*x + c))/(a*b^2*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="gi
ac")

[Out] Timed out
```

maple [B] time = 2.12, size = 1694, normalized size = 4.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] -1/a/d^2*f*c*ln(exp(I*(d*x+c))-1)+1/a/d*ln(exp(I*(d*x+c))+1)*f*x+1/a/d*e*ln
(exp(I*(d*x+c))+1)+1/a/d*e*ln(exp(I*(d*x+c))-1)+I/d^2*f*dilog(exp(I*(d*x+c)
))/a+2/d^2*f/(-a^2+b^2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(
-a^2+b^2)^(1/2)))*a*c+2/d*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^
(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a*x+2/d^2*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+
c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a*c+2/d*f/(-a^2+b^2)*ln((-I*a
-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*a*x+2/d^2/b^2*
a*f*c*ln(exp(I*(d*x+c)))-1/d^2/b^2*a*f*c*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*
(d*x+c))-I*b)-I/d^2/b^2*a*f*c^2-2*I/d^2*f/(-a^2+b^2)*dilog((-I*a-b*exp(I*(d
*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*a-2*I/d^2*f/(-a^2+b^2)*di
log((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a+1/2*I
*(d*f*x+I*f+d*e)/b/d^2*exp(I*(d*x+c))-1/d*e/a*ln(I*b*exp(2*I*(d*x+c))-2*a*e
xp(I*(d*x+c))-I*b)+1/d^2*f*c/a*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I
*b)+1/d/b^2*a*e*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)-2/d/b^2*a*e
*ln(exp(I*(d*x+c)))-I/d^2*f/a*dilog(exp(I*(d*x+c))+1)-1/2*I*a/b^2*f*x^2+I*a
/b^2*e*x-1/2*I*(d*f*x-I*f+d*e)/b/d^2*exp(-I*(d*x+c))-2*I/d/b^2*a*f*c*x-1/d*
b^2*f/a/(-a^2+b^2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+
b^2)^(1/2)))*x-1/d^2*b^2*f/a/(-a^2+b^2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2
)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*c-1/d*b^2*f/a/(-a^2+b^2)*ln((I*a+b*exp(I*
(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-1/d^2*b^2*f/a/(-a^2+b^
2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-1/d
^2/b^2*a^3*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a
^2+b^2)^(1/2)))*c-1/d/b^2*a^3*f/(-a^2+b^2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+
b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*x-1/d^2/b^2*a^3*f/(-a^2+b^2)*ln((-I*a-
b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*c-1/d/b^2*a^3*f
/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2
)))*x+I/d^2/b^2*a^3*f/(-a^2+b^2)*dilog((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1
/2))/(-I*a+(-a^2+b^2)^(1/2)))+I/d^2/b^2*a^3*f/(-a^2+b^2)*dilog((I*a+b*exp(I
*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))+I/d^2*b^2*f/a/(-a^2+b^2
)*dilog((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))+I
/d^2*b^2*f/a/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+
(-a^2+b^2)^(1/2)))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*cot(c + d*x)*(e + f*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)**2*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*cos(c + d*x)**2*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.332 $\int \frac{\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=59

$$\frac{(a^2-b^2)\log(a+b\sin(c+dx))}{ab^2d}+\frac{\log(\sin(c+dx))}{ad}-\frac{\sin(c+dx)}{bd}$$

```
[Out] ln(sin(d*x+c))/a/d+(a^2-b^2)*ln(a+b*sin(d*x+c))/a/b^2/d-sin(d*x+c)/b/d
```

Rubi [A] time = 0.11, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2837, 12, 894}

$$\frac{(a^2-b^2)\log(a+b\sin(c+dx))}{ab^2d}+\frac{\log(\sin(c+dx))}{ad}-\frac{\sin(c+dx)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Cos[c + d*x]^2*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] Log[Sin[c + d*x]]/(a*d) + ((a^2 - b^2)*Log[a + b*Sin[c + d*x]])/(a*b^2*d) -
 Sin[c + d*x]/(b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{b(b^2-x^2)}{x(a+x)}\,dx, x, b\sin(c+dx)\right)}{b^3 d}$$
$$= \frac{\text{Subst}\left(\int \frac{b^2-x^2}{x(a+x)}\,dx, x, b\sin(c+dx)\right)}{b^2 d}$$
$$= \frac{\text{Subst}\left(\int \left(-1+\frac{b^2}{ax}+\frac{a^2-b^2}{a(a+x)}\right)dx, x, b\sin(c+dx)\right)}{b^2 d}$$
$$= \frac{\log(\sin(c+dx))}{ad} + \frac{(a^2-b^2)\log(a+b\sin(c+dx))}{ab^2 d} - \frac{\sin(c+dx)}{bd}$$

Mathematica [A] time = 0.07, size = 53, normalized size = 0.90

$$\frac{(a^2-b^2)\log(a+b\sin(c+dx)) - ab\sin(c+dx) + b^2\log(\sin(c+dx))}{ab^2 d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cos[c + d*x]^2*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (b^2*Log[Sin[c + d*x]] + (a^2 - b^2)*Log[a + b*Sin[c + d*x]] - a*b*Sin[c +
d*x])/(a*b^2*d)
```

fricas [A] time = 0.49, size = 55, normalized size = 0.93

$$\frac{b^2\log\left(-\frac{1}{2}\sin(dx+c)\right) - ab\sin(dx+c) + (a^2-b^2)\log(b\sin(dx+c)+a)}{ab^2 d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] (b^2*log(-1/2*sin(d*x + c)) - a*b*sin(d*x + c) + (a^2 - b^2)*log(b*sin(d*x
+ c) + a))/(a*b^2*d)
```

giac [A] time = 0.72, size = 56, normalized size = 0.95

$$\frac{\frac{\log(|\sin(dx+c)|)}{a} - \frac{\sin(dx+c)}{b} + \frac{(a^2-b^2)\log(|b\sin(dx+c)+a|)}{ab^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] (log(abs(sin(d*x + c)))/a - sin(d*x + c)/b + (a^2 - b^2)*log(abs(b*sin(d*x
+ c) + a))/(a*b^2))/d
```

maple [A] time = 0.18, size = 68, normalized size = 1.15

$$-\frac{\sin(dx+c)}{bd}+\frac{a\ln(a+b\sin(dx+c))}{d\,b^2}-\frac{\ln(a+b\sin(dx+c))}{da}+\frac{\ln(\sin(dx+c))}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] -sin(d*x+c)/b/d+1/d/b^2*a*ln(a+b*sin(d*x+c))-1/d/a*ln(a+b*sin(d*x+c))+ln(si
n(d*x+c))/a/d
```

maxima [A] time = 0.59, size = 54, normalized size = 0.92

$$\frac{\frac{\log(\sin(dx+c))}{a}-\frac{\sin(dx+c)}{b}+\frac{(a^2-b^2)\log(b\sin(dx+c)+a)}{ab^2}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] (log(sin(d*x + c))/a - sin(d*x + c)/b + (a^2 - b^2)*log(b*sin(d*x + c) + a)
/(a*b^2))/d
```

mupad [B] time = 4.69, size = 98, normalized size = 1.66

$$\frac{\ln\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)\right)}{a\,d}-\frac{\sin(c+d\,x)}{b\,d}+\frac{\ln\left(a\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^2+2\,b\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+a\right)\left(\frac{a}{b^2}-\frac{1}{a}\right)}{d}-\frac{a\,\ln\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^2+1\right.}{b^2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*cot(c + d*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] log(tan(c/2 + (d*x)/2))/(a*d) - sin(c + d*x)/(b*d) + (log(a + 2*b*tan(c/2 +
 (d*x)/2) + a*tan(c/2 + (d*x)/2)^2)*(a/b^2 - 1/a))/d - (a*log(tan(c/2 + (d*
x)/2)^2 + 1))/(b^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**2*cot(d*x+c)/(a+b*sin(d*x+c)),x)
[Out] Integral(cos(c + d*x)**2*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.333 $\int \frac{(e+fx)^3 \cos^3(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=1138

$$\frac{(a^2-b^2)(e+fx)^4}{4b^3f}-\frac{(e+fx)^4}{8bf}-\frac{2\tanh^{-1}\left(e^{i(c+dx)}\right)(e+fx)^3}{ad}+\frac{(a^2-b^2)\cos(c+dx)(e+fx)^3}{ab^2d}+\frac{\cos(c+dx)(e+f}{ad}$$

```
[Out] -6*f^2*(f*x+e)*cos(d*x+c)/a/d^3-3*f*(f*x+e)^2*sin(d*x+c)/a/d^2-2*(f*x+e)^3*
arctanh(exp(I*(d*x+c)))/a/d+(f*x+e)^3*cos(d*x+c)/a/d+6*f^3*sin(d*x+c)/a/d^4
+3/8*f^3*cos(d*x+c)^2/b/d^4+I*(a^2-b^2)^(3/2)*(f*x+e)^3*ln(1-I*b*exp(I*(d*x
+c))/(a-(a^2-b^2)^(1/2)))/a/b^3/d+3*(a^2-b^2)^(3/2)*f*(f*x+e)^2*polylog(2,I
*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^3/d^2+3/4*e*f^2*x/b/d^2-1/2*(f*x
+e)^3*cos(d*x+c)*sin(d*x+c)/b/d-6*f^2*(f*x+e)*polylog(3,-exp(I*(d*x+c)))/a/
d^3+6*f^2*(f*x+e)*polylog(3,exp(I*(d*x+c)))/a/d^3-6*I*f^3*polylog(4,-exp(I*
(d*x+c)))/a/d^4-1/8*(f*x+e)^4/b/f-6*(a^2-b^2)*f^2*(f*x+e)*cos(d*x+c)/a/b^2/
d^3-3*(a^2-b^2)*f*(f*x+e)^2*sin(d*x+c)/a/b^2/d^2-6*(a^2-b^2)^(3/2)*f^3*poly
log(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^3/d^4+6*(a^2-b^2)^(3/2)*f
^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/b^3/d^4+6*I*f^3*poly
log(4,exp(I*(d*x+c)))/a/d^4-3*I*f*(f*x+e)^2*polylog(2,exp(I*(d*x+c)))/a/d^2
+3/8*f^3*x^2/b/d^2+3*I*f*(f*x+e)^2*polylog(2,-exp(I*(d*x+c)))/a/d^2+3/4*f^2
*(f*x+e)*cos(d*x+c)*sin(d*x+c)/b/d^3-6*I*(a^2-b^2)^(3/2)*f^2*(f*x+e)*polylo
g(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/b^3/d^3+6*I*(a^2-b^2)^(3/2)*f
^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^3/d^3-3*(a
^2-b^2)^(3/2)*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))
/a/b^3/d^2-I*(a^2-b^2)^(3/2)*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)
^(1/2)))/a/b^3/d+1/4*(a^2-b^2)*(f*x+e)^4/b^3/f+(a^2-b^2)*(f*x+e)^3*cos(d*x+
c)/a/b^2/d+6*(a^2-b^2)*f^3*sin(d*x+c)/a/b^2/d^4-3/4*f*(f*x+e)^2*cos(d*x+c)^
2/b/d^2
```

Rubi [A] time = 2.11, antiderivative size = 1138, normalized size of antiderivative = 1.00, number of steps used = 53, number of rules used = 18, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.529$, Rules used = {4543, 4408, 4405, 3311, 3296, 2637, 2633, 4183, 2531, 6609, 2282, 6589, 4525, 32, 3310, 3323, 2264, 2190}

$$\frac{(a^2-b^2)(e+fx)^4}{4b^3f}-\frac{(e+fx)^4}{8bf}-\frac{2\tanh^{-1}\left(e^{i(c+dx)}\right)(e+fx)^3}{ad}+\frac{(a^2-b^2)\cos(c+dx)(e+fx)^3}{ab^2d}+\frac{\cos(c+dx)(e+f}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x]^3*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (3*e*f^2*x)/(4*b*d^2) + (3*f^3*x^2)/(8*b*d^2) - (e + f*x)^4/(8*b*f) + ((a^2
 - b^2)*(e + f*x)^4)/(4*b^3*f) - (2*(e + f*x)^3*ArcTanh[E^(I*(c + d*x))])/(
```

```
a*d) - (6*f^2*(e + f*x)*Cos[c + d*x])/(a*d^3) - (6*(a^2 - b^2)*f^2*(e + f*x
)*Cos[c + d*x])/(a*b^2*d^3) + ((e + f*x)^3*Cos[c + d*x])/(a*d) + ((a^2 - b^
2)*(e + f*x)^3*Cos[c + d*x])/(a*b^2*d) + (3*f^3*Cos[c + d*x]^2)/(8*b*d^4) -
 (3*f*(e + f*x)^2*Cos[c + d*x]^2)/(4*b*d^2) + (I*(a^2 - b^2)^(3/2)*(e + f*x
)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b^3*d) - (I*(a
^2 - b^2)^(3/2)*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b
^2])])/(a*b^3*d) + ((3*I)*f*(e + f*x)^2*PolyLog[2, -E^(I*(c + d*x))])/(a*d^
2) - ((3*I)*f*(e + f*x)^2*PolyLog[2, E^(I*(c + d*x))])/(a*d^2) + (3*(a^2 -
b^2)^(3/2)*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b
^2])])/(a*b^3*d^2) - (3*(a^2 - b^2)^(3/2)*f*(e + f*x)^2*PolyLog[2, (I*b*E^(
I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b^3*d^2) - (6*f^2*(e + f*x)*PolyLo
g[3, -E^(I*(c + d*x))])/(a*d^3) + (6*f^2*(e + f*x)*PolyLog[3, E^(I*(c + d*x
))])/(a*d^3) + ((6*I)*(a^2 - b^2)^(3/2)*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*
(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b^3*d^3) - ((6*I)*(a^2 - b^2)^(3/2)*
f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b
^3*d^3) - ((6*I)*f^3*PolyLog[4, -E^(I*(c + d*x))])/(a*d^4) + ((6*I)*f^3*Pol
yLog[4, E^(I*(c + d*x))])/(a*d^4) - (6*(a^2 - b^2)^(3/2)*f^3*PolyLog[4, (I*
b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b^3*d^4) + (6*(a^2 - b^2)^(3/
2)*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b^3*d^4)
 + (6*f^3*Sin[c + d*x])/(a*d^4) + (6*(a^2 - b^2)*f^3*Sin[c + d*x])/(a*b^2*d
^4) - (3*f*(e + f*x)^2*Sin[c + d*x])/(a*d^2) - (3*(a^2 - b^2)*f*(e + f*x)^2
*Sin[c + d*x])/(a*b^2*d^2) + (3*f^2*(e + f*x)*Cos[c + d*x]*Sin[c + d*x])/(4
*b*d^3) - ((e + f*x)^3*Cos[c + d*x]*Sin[c + d*x])/(2*b*d)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
```

```
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4405

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)], x_Symbol] :> -Simp[((c + d*x)^m*Cos[a + b*x]^(n + 1))/(b*(n + 1)
), x] + Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cos[a + b*x]^(n + 1),
 x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos^3(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\cos^3(c+dx)\cot(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cos^4(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^3\cos(c+dx)\cot(c+dx)\,dx}{a} - \frac{\int (e+fx)^3\cos^2(c+dx)\,dx}{b} +$$

$$= -\frac{3f(e+fx)^2\cos^2(c+dx)}{4bd^2} - \frac{(e+fx)^3\cos(c+dx)\sin(c+dx)}{2bd} + \frac{\int (e$$

$$= -\frac{(e+fx)^4}{8bf} + \frac{(a^2-b^2)(e+fx)^4}{4b^3f} - \frac{2(e+fx)^3\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e+$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} - \frac{(e+fx)^4}{8bf} + \frac{(a^2-b^2)(e+fx)^4}{4b^3f} - \frac{2(e+fx)^3\tanh^{-1}}{ad}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} - \frac{(e+fx)^4}{8bf} + \frac{(a^2-b^2)(e+fx)^4}{4b^3f} - \frac{2(e+fx)^3\tanh^{-1}}{ad}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} - \frac{(e+fx)^4}{8bf} + \frac{(a^2-b^2)(e+fx)^4}{4b^3f} - \frac{2(e+fx)^3\tanh^{-1}}{ad}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} - \frac{(e+fx)^4}{8bf} + \frac{(a^2-b^2)(e+fx)^4}{4b^3f} - \frac{2(e+fx)^3\tanh^{-1}}{ad}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} - \frac{(e+fx)^4}{8bf} + \frac{(a^2-b^2)(e+fx)^4}{4b^3f} - \frac{2(e+fx)^3\tanh^{-1}}{ad}$$

$$= \frac{3ef^2x}{4bd^2} + \frac{3f^3x^2}{8bd^2} - \frac{(e+fx)^4}{8bf} + \frac{(a^2-b^2)(e+fx)^4}{4b^3f} - \frac{2(e+fx)^3\tanh^{-1}}{ad}$$

Mathematica [A] time = 6.73, size = 1181, normalized size = 1.04

$$\frac{2a\left(2a^2-3b^2\right)f^3x^4d^4 + 8a\left(2a^2-3b^2\right)ef^2x^3d^4 + 12a\left(2a^2-3b^2\right)e^2fx^2d^4 + 8a\left(2a^2-3b^2\right)e^3xd^4 - 32b^3(e+fx)^3}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x]^3*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (8*a*(2*a^2 - 3*b^2)*d^4*e^3*x + 12*a*(2*a^2 - 3*b^2)*d^4*e^2*f*x^2 + 8*a*(
2*a^2 - 3*b^2)*d^4*e*f^2*x^3 + 2*a*(2*a^2 - 3*b^2)*d^4*f^3*x^4 - 32*b^3*d^3
*(e + f*x)^3*ArcTanh[Cos[c + d*x] + I*Sin[c + d*x]] - 96*a^2*b*d*f^2*(e + f
*x)*Cos[c + d*x] + 16*a^2*b*d^3*(e + f*x)^3*Cos[c + d*x] + 3*a*b^2*f^3*Cos[
2*(c + d*x)] - 6*a*b^2*d^2*f*(e + f*x)^2*Cos[2*(c + d*x)] + 48*(a^2 - b^2)^
(3/2)*d^2*f*(e + f*x)^2*PolyLog[2, ((-I)*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2
- b^2])] + (16*I)*(a^2 - b^2)^(3/2)*((2*I)*d^3*e^3*ArcTan[(I*a + b*E^(I*(c
+ d*x)))/Sqrt[a^2 - b^2]] + 3*d^3*e^2*f*x*Log[1 + (I*b*E^(I*(c + d*x)))/(-a
 + Sqrt[a^2 - b^2])] + 3*d^3*e*f^2*x^2*Log[1 + (I*b*E^(I*(c + d*x)))/(-a +
Sqrt[a^2 - b^2])] + d^3*f^3*x^3*Log[1 + (I*b*E^(I*(c + d*x)))/(-a + Sqrt[a^
2 - b^2])] - 3*d^3*e^2*f*x*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^
2])] - 3*d^3*e*f^2*x^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])]
 - d^3*f^3*x^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])] + (3*I)
*d^2*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])]
+ 6*d*f^2*(e + f*x)*PolyLog[3, ((-I)*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^
2])] - 6*d*e*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])] -
6*d*f^3*x*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])] + (6*I)*f
^3*PolyLog[4, ((-I)*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] - (6*I)*f^3*
PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])]) + (48*I)*b^3*f*(d^
2*(e + f*x)^2*PolyLog[2, -Cos[c + d*x] - I*Sin[c + d*x]] + (2*I)*d*f*(e + f
*x)*PolyLog[3, -Cos[c + d*x] - I*Sin[c + d*x]] - 2*f^2*PolyLog[4, -Cos[c +
d*x] - I*Sin[c + d*x]]) - (48*I)*b^3*f*(d^2*(e + f*x)^2*PolyLog[2, Cos[c +
d*x] + I*Sin[c + d*x]] + (2*I)*d*f*(e + f*x)*PolyLog[3, Cos[c + d*x] + I*Si
n[c + d*x]] - 2*f^2*PolyLog[4, Cos[c + d*x] + I*Sin[c + d*x]]) + 96*a^2*b*f
^3*Sin[c + d*x] - 48*a^2*b*d^2*f*(e + f*x)^2*Sin[c + d*x] + 6*a*b^2*d*f^2*(
e + f*x)*Sin[2*(c + d*x)] - 4*a*b^2*d^3*(e + f*x)^3*Sin[2*(c + d*x)])/(16*a
*b^3*d^4)
```

fricas [C] time = 1.18, size = 4221, normalized size = 3.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/8*((2*a^3 - 3*a*b^2)*d^4*f^3*x^4 + 4*(2*a^3 - 3*a*b^2)*d^4*e*f^2*x^3 + 24
*I*b^3*f^3*polylog(4, cos(d*x + c) + I*sin(d*x + c)) - 24*I*b^3*f^3*polylog
(4, cos(d*x + c) - I*sin(d*x + c)) + 24*I*b^3*f^3*polylog(4, -cos(d*x + c)
+ I*sin(d*x + c)) - 24*I*b^3*f^3*polylog(4, -cos(d*x + c) - I*sin(d*x + c))
 + 24*I*(a^2*b - b^3)*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(
d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(
a^2 - b^2)/b^2))/b) - 24*I*(a^2*b - b^3)*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog
(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*si
n(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 24*I*(a^2*b - b^3)*f^3*sqrt(-(a^2
```

- b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*c
os(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 24*I*(a^2*b -
b^3)*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*s
in(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))
/b) + 3*(2*(2*a^3 - 3*a*b^2)*d^4*e^2*f + a*b^2*d^2*f^3)*x^2 - 3*(2*a*b^2*d^
2*f^3*x^2 + 4*a*b^2*d^2*e*f^2*x + 2*a*b^2*d^2*e^2*f - a*b^2*f^3)*cos(d*x +
c)^2 + 2*(-6*I*(a^2*b - b^3)*d^2*f^3*x^2 - 12*I*(a^2*b - b^3)*d^2*e*f^2*x -
6*I*(a^2*b - b^3)*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(
d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(
a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(6*I*(a^2*b - b^3)*d^2*f^3*x^2 + 12*I*(a^
2*b - b^3)*d^2*e*f^2*x + 6*I*(a^2*b - b^3)*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2
)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I
*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(6*I*(a^2*b - b^3
)*d^2*f^3*x^2 + 12*I*(a^2*b - b^3)*d^2*e*f^2*x + 6*I*(a^2*b - b^3)*d^2*e^2*
f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c
) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b +
1) + 2*(-6*I*(a^2*b - b^3)*d^2*f^3*x^2 - 12*I*(a^2*b - b^3)*d^2*e*f^2*x -
6*I*(a^2*b - b^3)*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(
d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(
a^2 - b^2)/b^2) + 2*b)/b + 1) - 4*((a^2*b - b^3)*d^3*e^3 - 3*(a^2*b - b^3)*
c*d^2*e^2*f + 3*(a^2*b - b^3)*c^2*d*e*f^2 - (a^2*b - b^3)*c^3*f^3)*sqrt(-(a
^2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 -
b^2)/b^2) + 2*I*a) - 4*((a^2*b - b^3)*d^3*e^3 - 3*(a^2*b - b^3)*c*d^2*e^2*
f + 3*(a^2*b - b^3)*c^2*d*e*f^2 - (a^2*b - b^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/
b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2)
- 2*I*a) + 4*((a^2*b - b^3)*d^3*e^3 - 3*(a^2*b - b^3)*c*d^2*e^2*f + 3*(a^2
*b - b^3)*c^2*d*e*f^2 - (a^2*b - b^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-
2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)
+ 4*((a^2*b - b^3)*d^3*e^3 - 3*(a^2*b - b^3)*c*d^2*e^2*f + 3*(a^2*b - b^3)
*c^2*d*e*f^2 - (a^2*b - b^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d
*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 4*((a^
2*b - b^3)*d^3*f^3*x^3 + 3*(a^2*b - b^3)*d^3*e*f^2*x^2 + 3*(a^2*b - b^3)*d^
3*e^2*f*x + 3*(a^2*b - b^3)*c*d^2*e^2*f - 3*(a^2*b - b^3)*c^2*d*e*f^2 + (a^
2*b - b^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*
a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2) + 2*b)/b) + 4*((a^2*b - b^3)*d^3*f^3*x^3 + 3*(a^2*b - b^3)*d^3*e*f^2*x^2
+ 3*(a^2*b - b^3)*d^3*e^2*f*x + 3*(a^2*b - b^3)*c*d^2*e^2*f - 3*(a^2*b - b
^3)*c^2*d*e*f^2 + (a^2*b - b^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*
I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 4*((a^2*b - b^3)*d^3*f^3*x^3 + 3*(a^2*b
- b^3)*d^3*e*f^2*x^2 + 3*(a^2*b - b^3)*d^3*e^2*f*x + 3*(a^2*b - b^3)*c*d^2
*e^2*f - 3*(a^2*b - b^3)*c^2*d*e*f^2 + (a^2*b - b^3)*c^3*f^3)*sqrt(-(a^2 -
b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x +
c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 4*((a^2*b - b^3)*
d^3*f^3*x^3 + 3*(a^2*b - b^3)*d^3*e*f^2*x^2 + 3*(a^2*b - b^3)*d^3*e^2*f*x +

```
 3*(a^2*b - b^3)*c*d^2*e^2*f - 3*(a^2*b - b^3)*c^2*d*e*f^2 + (a^2*b - b^3)*
c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x
+ c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/
b) + 24*((a^2*b - b^3)*d*f^3*x + (a^2*b - b^3)*d*e*f^2)*sqrt(-(a^2 - b^2)/b
^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x +
c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 24*((a^2*b - b^3)*d*f^3
*x + (a^2*b - b^3)*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*co
s(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2))/b) + 24*((a^2*b - b^3)*d*f^3*x + (a^2*b - b^3)*d*e*f^2)*
sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x +
c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 24*
((a^2*b - b^3)*d*f^3*x + (a^2*b - b^3)*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*poly
log(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*
b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) + 2*(2*(2*a^3 - 3*a*b^2)*d^4*e^3
 + 3*a*b^2*d^2*e*f^2)*x + 8*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + a^
2*b*d^3*e^3 - 6*a^2*b*d*e*f^2 + 3*(a^2*b*d^3*e^2*f - 2*a^2*b*d*f^3)*x)*cos(
d*x + c) + (-12*I*b^3*d^2*f^3*x^2 - 24*I*b^3*d^2*e*f^2*x - 12*I*b^3*d^2*e^2
*f)*dilog(cos(d*x + c) + I*sin(d*x + c)) + (12*I*b^3*d^2*f^3*x^2 + 24*I*b^3
*d^2*e*f^2*x + 12*I*b^3*d^2*e^2*f)*dilog(cos(d*x + c) - I*sin(d*x + c)) + (
-12*I*b^3*d^2*f^3*x^2 - 24*I*b^3*d^2*e*f^2*x - 12*I*b^3*d^2*e^2*f)*dilog(-c
os(d*x + c) + I*sin(d*x + c)) + (12*I*b^3*d^2*f^3*x^2 + 24*I*b^3*d^2*e*f^2*
x + 12*I*b^3*d^2*e^2*f)*dilog(-cos(d*x + c) - I*sin(d*x + c)) - 4*(b^3*d^3*
f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f*x + b^3*d^3*e^3)*log(cos(d*
x + c) + I*sin(d*x + c) + 1) - 4*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3
*b^3*d^3*e^2*f*x + b^3*d^3*e^3)*log(cos(d*x + c) - I*sin(d*x + c) + 1) + 4*
(b^3*d^3*e^3 - 3*b^3*c*d^2*e^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*log(-1/
2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) + 4*(b^3*d^3*e^3 - 3*b^3*c*d^2*e
^2*f + 3*b^3*c^2*d*e*f^2 - b^3*c^3*f^3)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d
*x + c) + 1/2) + 4*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d^3*e^2*f
*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*log(-cos(d*x + c)
 + I*sin(d*x + c) + 1) + 4*(b^3*d^3*f^3*x^3 + 3*b^3*d^3*e*f^2*x^2 + 3*b^3*d
^3*e^2*f*x + 3*b^3*c*d^2*e^2*f - 3*b^3*c^2*d*e*f^2 + b^3*c^3*f^3)*log(-cos(
d*x + c) - I*sin(d*x + c) + 1) + 24*(b^3*d*f^3*x + b^3*d*e*f^2)*polylog(3,
cos(d*x + c) + I*sin(d*x + c)) + 24*(b^3*d*f^3*x + b^3*d*e*f^2)*polylog(3,
cos(d*x + c) - I*sin(d*x + c)) - 24*(b^3*d*f^3*x + b^3*d*e*f^2)*polylog(3,
-cos(d*x + c) + I*sin(d*x + c)) - 24*(b^3*d*f^3*x + b^3*d*e*f^2)*polylog(3,
 -cos(d*x + c) - I*sin(d*x + c)) - 2*(12*a^2*b*d^2*f^3*x^2 + 24*a^2*b*d^2*e
*f^2*x + 12*a^2*b*d^2*e^2*f - 24*a^2*b*f^3 + (2*a*b^2*d^3*f^3*x^3 + 6*a*b^2
*d^3*e*f^2*x^2 + 2*a*b^2*d^3*e^3 - 3*a*b^2*d*e*f^2 + 3*(2*a*b^2*d^3*e^2*f -
 a*b^2*d*f^3)*x)*cos(d*x + c))*sin(d*x + c))/(a*b^3*d^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

maple [F] time = 6.87, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\cos^{3}\left(dx+c\right)\right) \cot \left(dx+c\right)}{a+b\sin \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*cot(c + d*x)*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{3} \cos^{3}\left(c+dx\right) \cot \left(c+dx\right)}{a+b\sin \left(c+dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)**3*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*cos(c + d*x)**3*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.334 $\int \frac{(e+fx)^2 \cos^3(c+dx) \cot(c+dx)}{a+b \sin(c+dx)} \, dx$

Optimal. Leaf size=825

$$\frac{(a^2-b^2)(e+fx)^3}{3b^3f} - \frac{(e+fx)^3}{6bf} - \frac{2\tanh^{-1}\left(e^{i(c+dx)}\right)(e+fx)^2}{ad} + \frac{(a^2-b^2)\cos(c+dx)(e+fx)^2}{ab^2d} + \frac{\cos(c+dx)(e+f}{ad}$$

```
[Out] 1/4*f^2*x/b/d^2-1/6*(f*x+e)^3/b/f+1/3*(a^2-b^2)*(f*x+e)^3/b^3/f-2*(f*x+e)^2
*arctanh(exp(I*(d*x+c)))/a/d-2*f^2*cos(d*x+c)/a/d^3-2*(a^2-b^2)*f^2*cos(d*x
+c)/a/b^2/d^3+(f*x+e)^2*cos(d*x+c)/a/d+(a^2-b^2)*(f*x+e)^2*cos(d*x+c)/a/b^2
/d-1/2*f*(f*x+e)*cos(d*x+c)^2/b/d^2-I*(a^2-b^2)^(3/2)*(f*x+e)^2*ln(1-I*b*ex
p(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/b^3/d+2*I*(a^2-b^2)^(3/2)*f^2*polylog(3
,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^3/d^3-2*I*f*(f*x+e)*polylog(2,
exp(I*(d*x+c)))/a/d^2+2*I*f*(f*x+e)*polylog(2,-exp(I*(d*x+c)))/a/d^2+2*(a^2
-b^2)^(3/2)*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b
^3/d^2-2*(a^2-b^2)^(3/2)*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2
)^(1/2)))/a/b^3/d^2-2*f^2*polylog(3,-exp(I*(d*x+c)))/a/d^3+2*f^2*polylog(3,
exp(I*(d*x+c)))/a/d^3-2*I*(a^2-b^2)^(3/2)*f^2*polylog(3,I*b*exp(I*(d*x+c))/
(a+(a^2-b^2)^(1/2)))/a/b^3/d^3+I*(a^2-b^2)^(3/2)*(f*x+e)^2*ln(1-I*b*exp(I*(
d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^3/d-2*f*(f*x+e)*sin(d*x+c)/a/d^2-2*(a^2-b^
2)*f*(f*x+e)*sin(d*x+c)/a/b^2/d^2+1/4*f^2*cos(d*x+c)*sin(d*x+c)/b/d^3-1/2*(
f*x+e)^2*cos(d*x+c)*sin(d*x+c)/b/d
```

Rubi [A] time = 1.63, antiderivative size = 825, normalized size of antiderivative = 1.00, number of steps used = 41, number of rules used = 18, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.529, Rules used = {4543, 4408, 4405, 3310, 3296, 2638, 4183, 2531, 2282, 6589, 4525, 3311, 32, 2635, 8, 3323, 2264, 2190}

$$\frac{(a^2-b^2)(e+fx)^3}{3b^3f} - \frac{(e+fx)^3}{6bf} - \frac{2\tanh^{-1}\left(e^{i(c+dx)}\right)(e+fx)^2}{ad} + \frac{(a^2-b^2)\cos(c+dx)(e+fx)^2}{ab^2d} + \frac{\cos(c+dx)(e+f}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x]^3*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] (f^2*x)/(4*b*d^2) - (e + f*x)^3/(6*b*f) + ((a^2 - b^2)*(e + f*x)^3)/(3*b^3*
f) - (2*(e + f*x)^2*ArcTanh[E^(I*(c + d*x))])/(a*d) - (2*f^2*Cos[c + d*x])/
(a*d^3) - (2*(a^2 - b^2)*f^2*Cos[c + d*x])/(a*b^2*d^3) + ((e + f*x)^2*Cos[c
 + d*x])/(a*d) + ((a^2 - b^2)*(e + f*x)^2*Cos[c + d*x])/(a*b^2*d) - (f*(e +
 f*x)*Cos[c + d*x]^2)/(2*b*d^2) + (I*(a^2 - b^2)^(3/2)*(e + f*x)^2*Log[1 -
(I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b^3*d) - (I*(a^2 - b^2)^(3
/2)*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b^
```

```
3*d) + ((2*I)*f*(e + f*x)*PolyLog[2, -E^(I*(c + d*x))])/(a*d^2) - ((2*I)*f*
(e + f*x)*PolyLog[2, E^(I*(c + d*x))])/(a*d^2) + (2*(a^2 - b^2)^(3/2)*f*(e
+ f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b^3*d^2)
 - (2*(a^2 - b^2)^(3/2)*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + S
qrt[a^2 - b^2])])/(a*b^3*d^2) - (2*f^2*PolyLog[3, -E^(I*(c + d*x))])/(a*d^3
) + (2*f^2*PolyLog[3, E^(I*(c + d*x))])/(a*d^3) + ((2*I)*(a^2 - b^2)^(3/2)*
f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a*b^3*d^3) -
((2*I)*(a^2 - b^2)^(3/2)*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2
 - b^2])])/(a*b^3*d^3) - (2*f*(e + f*x)*Sin[c + d*x])/(a*d^2) - (2*(a^2 - b
^2)*f*(e + f*x)*Sin[c + d*x])/(a*b^2*d^2) + (f^2*Cos[c + d*x]*Sin[c + d*x])
/(4*b*d^3) - ((e + f*x)^2*Cos[c + d*x]*Sin[c + d*x])/(2*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4405

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)], x_Symbol] :> -Simp[((c + d*x)^m*Cos[a + b*x]^(n + 1))/(b*(n + 1)
), x] + Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cos[a + b*x]^(n + 1),
 x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos^3(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\cos^3(c+dx)\cot(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cos^4(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)^2\cos(c+dx)\cot(c+dx)\,dx}{a} - \frac{\int (e+fx)^2\cos^2(c+dx)\,dx}{b}$$

$$= -\frac{f(e+fx)\cos^2(c+dx)}{2bd^2} - \frac{(e+fx)^2\cos(c+dx)\sin(c+dx)}{2bd} + \int (e+$$

$$= -\frac{(e+fx)^3}{6bf} + \frac{\left(a^2-b^2\right)(e+fx)^3}{3b^3f} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad} + \frac{(e}{}$$

$$= \frac{f^2x}{4bd^2} - \frac{(e+fx)^3}{6bf} + \frac{\left(a^2-b^2\right)(e+fx)^3}{3b^3f} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right.}{ad}$$

$$= \frac{f^2x}{4bd^2} - \frac{(e+fx)^3}{6bf} + \frac{\left(a^2-b^2\right)(e+fx)^3}{3b^3f} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right.}{ad}$$

$$= \frac{f^2x}{4bd^2} - \frac{(e+fx)^3}{6bf} + \frac{\left(a^2-b^2\right)(e+fx)^3}{3b^3f} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right.}{ad}$$

$$= \frac{f^2x}{4bd^2} - \frac{(e+fx)^3}{6bf} + \frac{\left(a^2-b^2\right)(e+fx)^3}{3b^3f} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right.}{ad}$$

$$= \frac{f^2x}{4bd^2} - \frac{(e+fx)^3}{6bf} + \frac{\left(a^2-b^2\right)(e+fx)^3}{3b^3f} - \frac{2(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right.}{ad}$$

Mathematica [A] time = 5.08, size = 1254, normalized size = 1.52

$$-\frac{-24d^2e^2\log\left(1-e^{i(c+dx)}\right)b^3 - 24d^2f^2x^2\log\left(1-e^{i(c+dx)}\right)b^3 - 48d^2efx\log\left(1-e^{i(c+dx)}\right)b^3 + 24d^2e^2\log\left(1+e^{i(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x]^3*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/24*(-24*a^3*d^3*e^2*x + 36*a*b^2*d^3*e^2*x - 24*a^3*d^3*e*f*x^2 + 36*a*b
^2*d^3*e*f*x^2 - 8*a^3*d^3*f^2*x^3 + 12*a*b^2*d^3*f^2*x^3 + 48*(a^2 - b^2)^
(3/2)*d^2*e^2*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] - 24*a^2*b*
d^2*e^2*Cos[c + d*x] + 48*a^2*b*f^2*Cos[c + d*x] - 48*a^2*b*d^2*e*f*x*Cos[c
 + d*x] - 24*a^2*b*d^2*f^2*x^2*Cos[c + d*x] + 6*a*b^2*d*e*f*Cos[2*(c + d*x)
] + 6*a*b^2*d*f^2*x*Cos[2*(c + d*x)] - 24*b^3*d^2*e^2*Log[1 - E^(I*(c + d*x
))] - 48*b^3*d^2*e*f*x*Log[1 - E^(I*(c + d*x))] - 24*b^3*d^2*f^2*x^2*Log[1
- E^(I*(c + d*x))] + 24*b^3*d^2*e^2*Log[1 + E^(I*(c + d*x))] + 48*b^3*d^2*e
*f*x*Log[1 + E^(I*(c + d*x))] + 24*b^3*d^2*f^2*x^2*Log[1 + E^(I*(c + d*x))]
 - (48*I)*(a^2 - b^2)^(3/2)*d^2*e*f*x*Log[1 + (I*b*E^(I*(c + d*x)))/(-a + S
qrt[a^2 - b^2])] - (24*I)*(a^2 - b^2)^(3/2)*d^2*f^2*x^2*Log[1 + (I*b*E^(I*(
c + d*x)))/(-a + Sqrt[a^2 - b^2])] + (48*I)*(a^2 - b^2)^(3/2)*d^2*e*f*x*Log
[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])] + (24*I)*(a^2 - b^2)^(3/2
)*d^2*f^2*x^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])] - (48*I)
*b^3*d*e*f*PolyLog[2, -E^(I*(c + d*x))] - (48*I)*b^3*d*f^2*x*PolyLog[2, -E^
(I*(c + d*x))] + (48*I)*b^3*d*e*f*PolyLog[2, E^(I*(c + d*x))] + (48*I)*b^3*
d*f^2*x*PolyLog[2, E^(I*(c + d*x))] - 48*(a^2 - b^2)^(3/2)*d*e*f*PolyLog[2,
 ((-I)*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] - 48*(a^2 - b^2)^(3/2)*d*
f^2*x*PolyLog[2, ((-I)*b*E^(I*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] + 48*(a^2
 - b^2)^(3/2)*d*e*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])]
 + 48*(a^2 - b^2)^(3/2)*d*f^2*x*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[
a^2 - b^2])] + 48*b^3*f^2*PolyLog[3, -E^(I*(c + d*x))] - 48*b^3*f^2*PolyLog
[3, E^(I*(c + d*x))] - (48*I)*(a^2 - b^2)^(3/2)*f^2*PolyLog[3, ((-I)*b*E^(I
*(c + d*x)))/(-a + Sqrt[a^2 - b^2])] + (48*I)*(a^2 - b^2)^(3/2)*f^2*PolyLog
[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])] + 48*a^2*b*d*e*f*Sin[c + d
*x] + 48*a^2*b*d*f^2*x*Sin[c + d*x] + 6*a*b^2*d^2*e^2*Sin[2*(c + d*x)] - 3*
a*b^2*f^2*Sin[2*(c + d*x)] + 12*a*b^2*d^2*e*f*x*Sin[2*(c + d*x)] + 6*a*b^2*
d^2*f^2*x^2*Sin[2*(c + d*x)])/(a*b^3*d^3)
```

fricas [C] time = 0.87, size = 2797, normalized size = 3.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
fricas")
```

```
[Out] 1/12*(2*(2*a^3 - 3*a*b^2)*d^3*f^2*x^3 + 6*(2*a^3 - 3*a*b^2)*d^3*e*f*x^2 + 1
2*b^3*f^2*polylog(3, cos(d*x + c) + I*sin(d*x + c)) + 12*b^3*f^2*polylog(3,
 cos(d*x + c) - I*sin(d*x + c)) - 12*b^3*f^2*polylog(3, -cos(d*x + c) + I*s
in(d*x + c)) - 12*b^3*f^2*polylog(3, -cos(d*x + c) - I*sin(d*x + c)) + 12*(
```

```
a^2*b - b^3)*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c)
- 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2
)/b^2))/b) - 12*(a^2*b - b^3)*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*
I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2))/b) + 12*(a^2*b - b^3)*f^2*sqrt(-(a^2 - b^2)/b^2)*p
olylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) -
 I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 12*(a^2*b - b^3)*f^2*sqrt(-
(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2
*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b) - 6*(a*b^2*
d*f^2*x + a*b^2*d*e*f)*cos(d*x + c)^2 + 2*(-6*I*(a^2*b - b^3)*d*f^2*x - 6*I
*(a^2*b - b^3)*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c)
 + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^
2)/b^2) + 2*b)/b + 1) + 2*(6*I*(a^2*b - b^3)*d*f^2*x + 6*I*(a^2*b - b^3)*d*
e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
+ 1) + 2*(6*I*(a^2*b - b^3)*d*f^2*x + 6*I*(a^2*b - b^3)*d*e*f)*sqrt(-(a^2 -
 b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*
x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*(-6*I*(
a^2*b - b^3)*d*f^2*x - 6*I*(a^2*b - b^3)*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilo
g(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*si
n(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 6*((a^2*b - b^3)*d^2*e^2
 - 2*(a^2*b - b^3)*c*d*e*f + (a^2*b - b^3)*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*
log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*
I*a) - 6*((a^2*b - b^3)*d^2*e^2 - 2*(a^2*b - b^3)*c*d*e*f + (a^2*b - b^3)*c
^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) +
2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 6*((a^2*b - b^3)*d^2*e^2 - 2*(a^2*b -
 b^3)*c*d*e*f + (a^2*b - b^3)*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(
d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 6*((a
^2*b - b^3)*d^2*e^2 - 2*(a^2*b - b^3)*c*d*e*f + (a^2*b - b^3)*c^2*f^2)*sqrt
(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(
a^2 - b^2)/b^2) - 2*I*a) - 6*((a^2*b - b^3)*d^2*f^2*x^2 + 2*(a^2*b - b^3)*d
^2*e*f*x + 2*(a^2*b - b^3)*c*d*e*f - (a^2*b - b^3)*c^2*f^2)*sqrt(-(a^2 - b^
2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c)
- I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 6*((a^2*b - b^3)*d^2
*f^2*x^2 + 2*(a^2*b - b^3)*d^2*e*f*x + 2*(a^2*b - b^3)*c*d*e*f - (a^2*b - b
^3)*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d
*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*
b)/b) - 6*((a^2*b - b^3)*d^2*f^2*x^2 + 2*(a^2*b - b^3)*d^2*e*f*x + 2*(a^2*b
 - b^3)*c*d*e*f - (a^2*b - b^3)*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2
*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 6*((a^2*b - b^3)*d^2*f^2*x^2 + 2*(a^2*
b - b^3)*d^2*e*f*x + 2*(a^2*b - b^3)*c*d*e*f - (a^2*b - b^3)*c^2*f^2)*sqrt(
-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 3*(2*(2*a
^3 - 3*a*b^2)*d^3*e^2 + a*b^2*d*f^2)*x + 12*(a^2*b*d^2*f^2*x^2 + 2*a^2*b*d^
```

```
2*e*f*x + a^2*b*d^2*e^2 - 2*a^2*b*f^2)*cos(d*x + c) + (-12*I*b^3*d*f^2*x -
12*I*b^3*d*e*f)*dilog(cos(d*x + c) + I*sin(d*x + c)) + (12*I*b^3*d*f^2*x +
12*I*b^3*d*e*f)*dilog(cos(d*x + c) - I*sin(d*x + c)) + (-12*I*b^3*d*f^2*x -
 12*I*b^3*d*e*f)*dilog(-cos(d*x + c) + I*sin(d*x + c)) + (12*I*b^3*d*f^2*x
+ 12*I*b^3*d*e*f)*dilog(-cos(d*x + c) - I*sin(d*x + c)) - 6*(b^3*d^2*f^2*x^
2 + 2*b^3*d^2*e*f*x + b^3*d^2*e^2)*log(cos(d*x + c) + I*sin(d*x + c) + 1) -
 6*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + b^3*d^2*e^2)*log(cos(d*x + c) - I*s
in(d*x + c) + 1) + 6*(b^3*d^2*e^2 - 2*b^3*c*d*e*f + b^3*c^2*f^2)*log(-1/2*c
os(d*x + c) + 1/2*I*sin(d*x + c) + 1/2) + 6*(b^3*d^2*e^2 - 2*b^3*c*d*e*f +
b^3*c^2*f^2)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2) + 6*(b^3*d^2
*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e*f - b^3*c^2*f^2)*log(-cos(d*x + c)
 + I*sin(d*x + c) + 1) + 6*(b^3*d^2*f^2*x^2 + 2*b^3*d^2*e*f*x + 2*b^3*c*d*e
*f - b^3*c^2*f^2)*log(-cos(d*x + c) - I*sin(d*x + c) + 1) - 3*(8*a^2*b*d*f^
2*x + 8*a^2*b*d*e*f + (2*a*b^2*d^2*f^2*x^2 + 4*a*b^2*d^2*e*f*x + 2*a*b^2*d^
2*e^2 - a*b^2*f^2)*cos(d*x + c))*sin(d*x + c))/(a*b^3*d^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

maple [F] time = 6.11, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \left(\cos^{3}\left(dx+c\right)\right) \cot\left(dx+c\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [**F(-1)**] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*cot(c + d*x)*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^{2} \cos^{3}\left(c + dx\right) \cot\left(c + dx\right)}{a + b \sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)**3*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*cos(c + d*x)**3*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.335 $\int \frac{(e+fx)\cos^3(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=524

$$-\frac{f\left(a^2-b^2\right)\sin(c+dx)}{ab^2d^2}+\frac{\left(a^2-b^2\right)(e+fx)\cos(c+dx)}{ab^2d}+\frac{f\left(a^2-b^2\right)^{3/2}\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^3d^2}-\frac{f\left(a^2-b^2\right)^{3/2}\text{Li}_2\left(\frac{ibe^{i(c+d}}{a+\sqrt{a^2-}}\right.}{ab^3d^2}$$

```
[Out] -1/2*e*x/b+(a^2-b^2)*e*x/b^3-1/4*f*x^2/b+1/2*(a^2-b^2)*f*x^2/b^3-2*(f*x+e)*
arctanh(exp(I*(d*x+c)))/a/d+(f*x+e)*cos(d*x+c)/a/d+(a^2-b^2)*(f*x+e)*cos(d*
x+c)/a/b^2/d-1/4*f*cos(d*x+c)^2/b/d^2+I*(a^2-b^2)^(3/2)*(f*x+e)*ln(1-I*b*ex
p(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^3/d-I*f*polylog(2,exp(I*(d*x+c)))/a/d
^2+I*f*polylog(2,-exp(I*(d*x+c)))/a/d^2-I*(a^2-b^2)^(3/2)*(f*x+e)*ln(1-I*b*
exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/b^3/d+(a^2-b^2)^(3/2)*f*polylog(2,I*b
*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a/b^3/d^2-(a^2-b^2)^(3/2)*f*polylog(2,
I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a/b^3/d^2-f*sin(d*x+c)/a/d^2-(a^2-b
^2)*f*sin(d*x+c)/a/b^2/d^2-1/2*(f*x+e)*cos(d*x+c)*sin(d*x+c)/b/d
```

Rubi [A] time = 0.90, antiderivative size = 524, normalized size of antiderivative = 1.00, number of steps used = 31, number of rules used = 14, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.438, Rules used = {4543, 4408, 4405, 2633, 3296, 2637, 4183, 2279, 2391, 4525, 3310, 3323, 2264, 2190}

$$\frac{f\left(a^2-b^2\right)^{3/2}\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{ab^3d^2}-\frac{f\left(a^2-b^2\right)^{3/2}\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{ab^3d^2}+\frac{if\text{PolyLog}\left(2,-e^{i(c+dx)}\right)}{ad^2}-\frac{if\text{PolyLo}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x]^3*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(e*x)/(2*b) + ((a^2 - b^2)*e*x)/b^3 - (f*x^2)/(4*b) + ((a^2 - b^2)*f*x^2)/
(2*b^3) - (2*(e + f*x)*ArcTanh[E^(I*(c + d*x))])/(a*d) + ((e + f*x)*Cos[c +
 d*x])/(a*d) + ((a^2 - b^2)*(e + f*x)*Cos[c + d*x])/(a*b^2*d) - (f*Cos[c +
d*x]^2)/(4*b*d^2) + (I*(a^2 - b^2)^(3/2)*(e + f*x)*Log[1 - (I*b*E^(I*(c + d
*x)))/(a - Sqrt[a^2 - b^2])])/(a*b^3*d) - (I*(a^2 - b^2)^(3/2)*(e + f*x)*Lo
g[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a*b^3*d) + (I*f*PolyLo
g[2, -E^(I*(c + d*x))])/(a*d^2) - (I*f*PolyLog[2, E^(I*(c + d*x))])/(a*d^2)
 + ((a^2 - b^2)^(3/2)*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^
2])])/(a*b^3*d^2) - ((a^2 - b^2)^(3/2)*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(
a + Sqrt[a^2 - b^2])])/(a*b^3*d^2) - (f*Sin[c + d*x])/(a*d^2) - ((a^2 - b^2
)*f*Sin[c + d*x])/(a*b^2*d^2) - ((e + f*x)*Cos[c + d*x]*Sin[c + d*x])/(2*b*
d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4405

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)], x_Symbol] :> -Simp[((c + d*x)^m*Cos[a + b*x]^(n + 1))/(b*(n + 1)
), x] + Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cos[a + b*x]^(n + 1),
 x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cos^3(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\cos^3(c+dx)\cot(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cos^4(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= \frac{\int (e+fx)\cos(c+dx)\cot(c+dx)\,dx}{a} - \frac{\int (e+fx)\cos^2(c+dx)\,dx}{b} + \Big($$

$$= -\frac{f\cos^2(c+dx)}{4bd^2} - \frac{(e+fx)\cos(c+dx)\sin(c+dx)}{2bd} + \frac{\int (e+fx)\csc(c$$

$$= -\frac{ex}{2b} + \frac{\left(a^2-b^2\right)ex}{b^3} - \frac{fx^2}{4b} + \frac{\left(a^2-b^2\right)fx^2}{2b^3} - \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx}\right.}{ad}$$

$$= -\frac{ex}{2b} + \frac{\left(a^2-b^2\right)ex}{b^3} - \frac{fx^2}{4b} + \frac{\left(a^2-b^2\right)fx^2}{2b^3} - \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx}\right.}{ad}$$

$$= -\frac{ex}{2b} + \frac{\left(a^2-b^2\right)ex}{b^3} - \frac{fx^2}{4b} + \frac{\left(a^2-b^2\right)fx^2}{2b^3} - \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx}\right.}{ad}$$

$$= -\frac{ex}{2b} + \frac{\left(a^2-b^2\right)ex}{b^3} - \frac{fx^2}{4b} + \frac{\left(a^2-b^2\right)fx^2}{2b^3} - \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx}\right.}{ad}$$

$$= -\frac{ex}{2b} + \frac{\left(a^2-b^2\right)ex}{b^3} - \frac{fx^2}{4b} + \frac{\left(a^2-b^2\right)fx^2}{2b^3} - \frac{2(e+fx)\tanh^{-1}\left(e^{i(c+dx}\right.}{ad}$$

Mathematica [A] time = 11.76, size = 934, normalized size = 1.78

$$-\frac{(de+dfx)\left(\frac{2(de-cf)\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}}-\frac{if\left(\log\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)\log\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)+\sqrt{b^2-a^2}}{-ia+b+\sqrt{b^2-a^2}}\right)+\text{Li}_2\left(\frac{a\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)}{a+i\left(b+\sqrt{b^2-a^2}\right)}\right)\right)}{\sqrt{b^2-a^2}}+\frac{if\left(\log\left(\cdots\right.\right.}{\cdots}\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Cos[c + d*x]^3*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/4*((-2*a^2 + 3*b^2)*(c + d*x)*(2*d*e - 2*c*f + f*(c + d*x)))/(b^3*d^2) +
 (a*(d*e - c*f + f*(c + d*x))*Cos[c + d*x])/(b^2*d^2) - (f*Cos[2*(c + d*x)]
)/(8*b*d^2) + (e*Log[Tan[(c + d*x)/2]])/(a*d) - (c*f*Log[Tan[(c + d*x)/2]])
/(a*d^2) + (f*((c + d*x)*(Log[1 - E^(I*(c + d*x))] - Log[1 + E^(I*(c + d*x)
)]) + I*(PolyLog[2, -E^(I*(c + d*x))] - PolyLog[2, E^(I*(c + d*x))])))/(a*d
^2) - ((a^2 - b^2)^2*(d*e + d*f*x)*((2*(d*e - c*f)*ArcTan[(b + a*Tan[(c + d
*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] - (I*f*(Log[1 - I*Tan[(c + d*x)/2
]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2
+ b^2])] + PolyLog[2, (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 +
b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + Sqr
t[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])] + PolyLog
[2, (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^
2 + b^2] + (I*f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[-((b - Sqrt[-a^2 + b^2] +
a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2]))] + PolyLog[2, (a*(I + Tan
[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])]))/Sqrt[-a^2 + b^2] - (I*f*(Lo
g[1 + I*Tan[(c + d*x)/2]]*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(
I*a + b - Sqrt[-a^2 + b^2])] + PolyLog[2, (a + I*a*Tan[(c + d*x)/2])/(a + I
*(-b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2]))/(a*b^3*d^2*(d*e - c*f + I*f
*Log[1 - I*Tan[(c + d*x)/2]] - I*f*Log[1 + I*Tan[(c + d*x)/2]])) - (a*f*Sin
[c + d*x])/(b^2*d^2) - ((d*e - c*f + f*(c + d*x))*Sin[2*(c + d*x)])/(4*b*d^
2)
```

fricas [B] time = 0.80, size = 1619, normalized size = 3.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fr
icas")
```

```
[Out] 1/4*((2*a^3 - 3*a*b^2)*d^2*f*x^2 - a*b^2*f*cos(d*x + c)^2 + 2*(2*a^3 - 3*a*
b^2)*d^2*e*x - 2*I*b^3*f*dilog(cos(d*x + c) + I*sin(d*x + c)) + 2*I*b^3*f*d
```

```
ilog(cos(d*x + c) - I*sin(d*x + c)) - 2*I*b^3*f*dilog(-cos(d*x + c) + I*sin
(d*x + c)) + 2*I*b^3*f*dilog(-cos(d*x + c) - I*sin(d*x + c)) - 2*I*(a^2*b -
 b^3)*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x
 + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)
/b + 1) + 2*I*(a^2*b - b^3)*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(
d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(
a^2 - b^2)/b^2) + 2*b)/b + 1) + 2*I*(a^2*b - b^3)*f*sqrt(-(a^2 - b^2)/b^2)*
dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*
b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1) - 2*I*(a^2*b - b^3)*f*
sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) -
 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)
 - 2*((a^2*b - b^3)*d*e - (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b
*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) -
2*((a^2*b - b^3)*d*e - (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*co
s(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) + 2*(
(a^2*b - b^3)*d*e - (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(
d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a) + 2*((a
^2*b - b^3)*d*e - (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*
x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a) - 2*((a^2
*b - b^3)*d*f*x + (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*
cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*((a^2*b - b^3)*d*f*x + (a^2*b - b^3)*c*f)
*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*
(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) - 2*((
a^2*b - b^3)*d*f*x + (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*
I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) + 2*((a^2*b - b^3)*d*f*x + (a^2*b - b^3)*
c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c)
 - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b) +
 4*(a^2*b*d*f*x + a^2*b*d*e)*cos(d*x + c) - 2*(b^3*d*f*x + b^3*d*e)*log(cos
(d*x + c) + I*sin(d*x + c) + 1) - 2*(b^3*d*f*x + b^3*d*e)*log(cos(d*x + c)
- I*sin(d*x + c) + 1) + 2*(b^3*d*e - b^3*c*f)*log(-1/2*cos(d*x + c) + 1/2*I
*sin(d*x + c) + 1/2) + 2*(b^3*d*e - b^3*c*f)*log(-1/2*cos(d*x + c) - 1/2*I*
sin(d*x + c) + 1/2) + 2*(b^3*d*f*x + b^3*c*f)*log(-cos(d*x + c) + I*sin(d*x
 + c) + 1) + 2*(b^3*d*f*x + b^3*c*f)*log(-cos(d*x + c) - I*sin(d*x + c) + 1
) - 2*(2*a^2*b*f + (a*b^2*d*f*x + a*b^2*d*e)*cos(d*x + c))*sin(d*x + c))/(a
*b^3*d^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] Timed out
```

maple [B] time = 2.14, size = 1850, normalized size = 3.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] 2*I/d^2*f*c/a*b/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^
2+b^2)^(1/2))+1/2*a*(d*f*x+I*f+d*e)/b^2/d^2*exp(I*(d*x+c))+1/2*a*(d*f*x-I*f
+d*e)/b^2/d^2*exp(-I*(d*x+c))-2/d/b*a*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d
*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-2/d^2/b*a*f/(-a^2+b^2)^(
1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-1
/a/d^2*f*c*ln(exp(I*(d*x+c))-1)-1/a/d*ln(exp(I*(d*x+c))+1)*f*x+2*I*a^3/b^3/
d^2*f*c/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(
1/2))+a^3/b^3/d*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2
))/(I*a+(-a^2+b^2)^(1/2)))*x+a^3/b^3/d^2*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I
*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-2*I*a^3/b^3/d*e/(-a^2
+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))-I*a^3/b
^3/d^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*
a+(-a^2+b^2)^(1/2)))-1/a/d*e*ln(exp(I*(d*x+c))+1)+1/a/d*e*ln(exp(I*(d*x+c))
-1)+1/d*f*b/a/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(
I*a+(-a^2+b^2)^(1/2)))*x+1/d^2*f*b/a/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+
c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-2*I/d*e/a*b/(-a^2+b^2)^(1/2
)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))-I/d^2*f*b/a/(-a^2
+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(
1/2)))+I/d^2*f/a*dilog(exp(I*(d*x+c))+1)+I/d^2*f*dilog(exp(I*(d*x+c)))/a-4*
I/b/d^2*a*f*c/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+
b^2)^(1/2))+I/b^3/d^2*a^3*f/(-a^2+b^2)^(1/2)*dilog((-I*a-b*exp(I*(d*x+c))+(
-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))-1/b^3/d^2*a^3*f/(-a^2+b^2)^(1/2)*
ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*c+2/b/
d*a*f/(-a^2+b^2)^(1/2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-
a^2+b^2)^(1/2)))*x+2/b/d^2*a*f/(-a^2+b^2)^(1/2)*ln((-I*a-b*exp(I*(d*x+c))+(
-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*c-b/d*f/a/(-a^2+b^2)^(1/2)*ln((-I
*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*x-b/d^2*f/a/
(-a^2+b^2)^(1/2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^
2)^(1/2)))*c-1/b^3/d*a^3*f/(-a^2+b^2)^(1/2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2
+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*x+I*b/d^2*f/a/(-a^2+b^2)^(1/2)*dilog(
(-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))+4*I/b/d*a
*e/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))
-3/4*f*x^2/b+2*I/b/d^2*a*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a
^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-2*I/b/d^2*a*f/(-a^2+b^2)^(1/2)*dilog
((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))+1/2*a^2*
```

```
f*x^2/b^3-1/4*(f*x+e)/d/b*sin(2*d*x+2*c)+a^2*e*x/b^3-3/2*e*x/b-1/8*f/d^2/b*
cos(2*d*x+2*c)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*cot(c + d*x)*(e + f*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)\cos^{3}\left(c + dx\right)\cot\left(c + dx\right)}{a + b\sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)**3*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*cos(c + d*x)**3*cot(c + d*x)/(a + b*sin(c + d*x)), x)
```

3.336 $\int \frac{\cos^3(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=124

$$-\frac{2\left(a^2-b^2\right)^{3/2}\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{ab^3d}+\frac{x\left(2a^2-3b^2\right)}{2b^3}+\frac{a\cos(c+dx)}{b^2d}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}-\frac{\sin(c+dx)\cos(c+a}{2bd}$$

```
[Out] 1/2*(2*a^2-3*b^2)*x/b^3-2*(a^2-b^2)^(3/2)*arctan((b+a*tan(1/2*d*x+1/2*c))/(
a^2-b^2)^(1/2))/a/b^3/d-arctanh(cos(d*x+c))/a/d+a*cos(d*x+c)/b^2/d-1/2*cos(
d*x+c)*sin(d*x+c)/b/d
```

Rubi [A] time = 0.28, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {2895, 3057, 2660, 618, 204, 3770}

$$-\frac{2\left(a^2-b^2\right)^{3/2}\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{ab^3d}+\frac{x\left(2a^2-3b^2\right)}{2b^3}+\frac{a\cos(c+dx)}{b^2d}-\frac{\tanh^{-1}(\cos(c+dx))}{ad}-\frac{\sin(c+dx)\cos(c+a}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Cos[c + d*x]^3*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((2*a^2 - 3*b^2)*x)/(2*b^3) - (2*(a^2 - b^2)^(3/2)*ArcTan[(b + a*Tan[(c + d
*x)/2])/Sqrt[a^2 - b^2]])/(a*b^3*d) - ArcTanh[Cos[c + d*x]]/(a*d) + (a*Cos[
c + d*x])/(b^2*d) - (Cos[c + d*x]*Sin[c + d*x])/(2*b*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
```

```
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
a^2 - b^2, 0]
```

Rule 2895

```
Int[cos[(e_.) + (f_.)*(x_)]^4*((d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)*((a_) +
(b_.)*sin[(e_.) + (f_.)*(x_)])^(m_), x_Symbol] :> Simp[(a*(n + 3)*Cos[e + f
*x]*(d*Sin[e + f*x])^(n + 1)*(a + b*Sin[e + f*x])^(m + 1))/(b^2*d*f*(m + n
+ 3)*(m + n + 4)), x] + (-Dist[1/(b^2*(m + n + 3)*(m + n + 4)), Int[(d*Sin[
e + f*x])^n*(a + b*Sin[e + f*x])^m*Simp[a^2*(n + 1)*(n + 3) - b^2*(m + n +
3)*(m + n + 4) + a*b*m*Sin[e + f*x] - (a^2*(n + 2)*(n + 3) - b^2*(m + n + 3
)*(m + n + 5))*Sin[e + f*x]^2, x], x], x] - Simp[(Cos[e + f*x]*(d*Sin[e + f
*x])^(n + 2)*(a + b*Sin[e + f*x])^(m + 1))/(b*d^2*f*(m + n + 4)), x]) /; Fr
eeQ[{a, b, d, e, f, m, n}, x] && NeQ[a^2 - b^2, 0] && (IGtQ[m, 0] || Intege
rsQ[2*m, 2*n]) &&  !m < -1 &&  !LtQ[n, -1] && NeQ[m + n + 3, 0] && NeQ[m +
n + 4, 0]
```

Rule 3057

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[(C*x)/(b*d), x] + (Dist[(A*b^2 - a*b*B + a^2*C)
/(b*(b*c - a*d)), Int[1/(a + b*Sin[e + f*x]), x], x] - Dist[(c^2*C - B*c*d
+ A*d^2)/(d*(b*c - a*d)), Int[1/(c + d*Sin[e + f*x]), x], x]) /; FreeQ[{a,
b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && Ne
Q[c^2 - d^2, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cos^3(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{a\cos(c+dx)}{b^2d} - \frac{\cos(c+dx)\sin(c+dx)}{2bd} - \frac{\int \frac{\csc(c+dx)\left(-2b^2-ab\sin(c+dx)-\left(2a^2-3b^2\right)\sin^2}{a+b\sin(c+dx)}}{2b^2}$$

$$= \frac{\left(2a^2-3b^2\right)x}{2b^3} + \frac{a\cos(c+dx)}{b^2d} - \frac{\cos(c+dx)\sin(c+dx)}{2bd} + \frac{\int\csc(c+dx)\,dx}{a} -$$

$$= \frac{\left(2a^2-3b^2\right)x}{2b^3} - \frac{\tanh^{-1}(\cos(c+dx))}{ad} + \frac{a\cos(c+dx)}{b^2d} - \frac{\cos(c+dx)\sin(c+dx)}{2bd}$$

$$= \frac{\left(2a^2-3b^2\right)x}{2b^3} - \frac{\tanh^{-1}(\cos(c+dx))}{ad} + \frac{a\cos(c+dx)}{b^2d} - \frac{\cos(c+dx)\sin(c+dx)}{2bd}$$

$$= \frac{\left(2a^2-3b^2\right)x}{2b^3} - \frac{2\left(a^2-b^2\right)^{3/2}\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{ab^3d} - \frac{\tanh^{-1}(\cos(c+dx))}{ad} +$$

Mathematica [A] time = 0.27, size = 143, normalized size = 1.15

$$-\frac{-4a^3c-4a^3dx+8\left(a^2-b^2\right)^{3/2}\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)-4a^2b\cos(c+dx)+ab^2\sin(2(c+dx))+6ab^2c+6ab^2dx}{4ab^3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cos[c + d*x]^3*Cot[c + d*x])/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/4*(-4*a^3*c + 6*a*b^2*c - 4*a^3*d*x + 6*a*b^2*d*x + 8*(a^2 - b^2)^(3/2)*
ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]] - 4*a^2*b*Cos[c + d*x] + 4
*b^3*Log[Cos[(c + d*x)/2]] - 4*b^3*Log[Sin[(c + d*x)/2]] + a*b^2*Sin[2*(c +
 d*x)])/(a*b^3*d)
```

fricas [A] time = 0.65, size = 350, normalized size = 2.82

$$\left[-\frac{ab^2\cos(dx+c)\sin(dx+c)-2a^2b\cos(dx+c)+b^3\log\left(\frac{1}{2}\cos(dx+c)+\frac{1}{2}\right)-b^3\log\left(-\frac{1}{2}\cos(dx+c)+\frac{1}{2}\right)-}{2a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] [-1/2*(a*b^2*cos(d*x + c)*sin(d*x + c) - 2*a^2*b*cos(d*x + c) + b^3*log(1/2
*cos(d*x + c) + 1/2) - b^3*log(-1/2*cos(d*x + c) + 1/2) - (2*a^3 - 3*a*b^2)
*d*x - (-a^2 + b^2)^(3/2)*log(-((2*a^2 - b^2)*cos(d*x + c)^2 - 2*a*b*sin(d*
x + c) - a^2 - b^2 - 2*(a*cos(d*x + c)*sin(d*x + c) + b*cos(d*x + c))*sqrt(
-a^2 + b^2))/(b^2*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2)))/(a*b^3
*d), -1/2*(a*b^2*cos(d*x + c)*sin(d*x + c) - 2*a^2*b*cos(d*x + c) + b^3*log
(1/2*cos(d*x + c) + 1/2) - b^3*log(-1/2*cos(d*x + c) + 1/2) - (2*a^3 - 3*a*
b^2)*d*x - 2*(a^2 - b^2)^(3/2)*arctan(-(a*sin(d*x + c) + b)/(sqrt(a^2 - b^2
)*cos(d*x + c))))/(a*b^3*d)]
```

giac [A] time = 0.65, size = 183, normalized size = 1.48

$$\frac{\frac{2\,\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right|\right)}{a}+\frac{(2\,a^2-3\,b^2)(dx+c)}{b^3}-\frac{4\,(a^4-2\,a^2b^2+b^4)\left(\pi\left\lfloor\frac{dx+c}{2\pi}+\frac{1}{2}\right\rfloor\mathrm{sgn}(a)+\arctan\left(\frac{a\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+b}{\sqrt{a^2-b^2}}\right)\right)}{\sqrt{a^2-b^2}\,ab^3}+\frac{2\left(b\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)^3+2\,a\tan\left(\right.\right.}{\left(\tan\left(\frac{1}{2}\,d\right.\right.}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/2*(2*log(abs(tan(1/2*d*x + 1/2*c)))/a + (2*a^2 - 3*b^2)*(d*x + c)/b^3 - 4
*(a^4 - 2*a^2*b^2 + b^4)*(pi*floor(1/2*(d*x + c)/pi + 1/2)*sgn(a) + arctan(
(a*tan(1/2*d*x + 1/2*c) + b)/sqrt(a^2 - b^2)))/(sqrt(a^2 - b^2)*a*b^3) + 2*
(b*tan(1/2*d*x + 1/2*c)^3 + 2*a*tan(1/2*d*x + 1/2*c)^2 - b*tan(1/2*d*x + 1/
2*c) + 2*a)/((tan(1/2*d*x + 1/2*c)^2 + 1)^2*b^2))/d
```

maple [B] time = 0.20, size = 334, normalized size = 2.69

$$\frac{\tan^3\left(\frac{dx}{2}+\frac{c}{2}\right)}{db\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}+\frac{2\left(\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)a}{d\,b^2\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}-\frac{\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}{db\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}+\frac{2a}{d\,b^2\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)^2}+\frac{2\,\mathrm{arct}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] 1/d/b/(1+tan(1/2*d*x+1/2*c)^2)^2*tan(1/2*d*x+1/2*c)^3+2/d/b^2/(1+tan(1/2*d*
x+1/2*c)^2)^2*tan(1/2*d*x+1/2*c)^2*a-1/d/b/(1+tan(1/2*d*x+1/2*c)^2)^2*tan(1
/2*d*x+1/2*c)+2/d/b^2/(1+tan(1/2*d*x+1/2*c)^2)^2*a+2/d/b^3*arctan(tan(1/2*d
*x+1/2*c))*a^2-3/d/b*arctan(tan(1/2*d*x+1/2*c))+1/a/d*ln(tan(1/2*d*x+1/2*c)
)-2/d*a^3/b^3/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)/(a^2-
b^2)^(1/2))+4/d/b*a/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)
```

```
/(a^2-b^2)^(1/2))-2/d*b/a/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c
)+2*b)/(a^2-b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3*cot(d*x+c)/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [B] time = 6.64, size = 1320, normalized size = 10.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*cot(c + d*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] log(sin(c/2 + (d*x)/2)/cos(c/2 + (d*x)/2))/(a*d) - sin(2*c + 2*d*x)/(4*b*d)
 - (3*atan((2*a^3*cos(c/2 + (d*x)/2) + 2*b^3*sin(c/2 + (d*x)/2) - 3*a*b^2*c
os(c/2 + (d*x)/2))/(2*b^3*cos(c/2 + (d*x)/2) - 2*a^3*sin(c/2 + (d*x)/2) + 3
*a*b^2*sin(c/2 + (d*x)/2))))/(b*d) + (a*cos(c + d*x))/(b^2*d) + (2*a^2*atan
((2*a^3*cos(c/2 + (d*x)/2) + 2*b^3*sin(c/2 + (d*x)/2) - 3*a*b^2*cos(c/2 + (
d*x)/2))/(2*b^3*cos(c/2 + (d*x)/2) - 2*a^3*sin(c/2 + (d*x)/2) + 3*a*b^2*sin
(c/2 + (d*x)/2))))/(b^3*d) + (atan((b^6*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a
^2*b^4 + 3*a^4*b^2)^(3/2)*64i - a^12*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*
b^4 + 3*a^4*b^2)^(1/2)*16i - a^6*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4
+ 3*a^4*b^2)^(3/2)*16i - a^3*b^3*cos(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4
+ 3*a^4*b^2)^(3/2)*42i + a^3*b^9*cos(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4
+ 3*a^4*b^2)^(1/2)*66i - a^5*b^7*cos(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4
+ 3*a^4*b^2)^(1/2)*176i + a^7*b^5*cos(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4
 + 3*a^4*b^2)^(1/2)*178i - a^9*b^3*cos(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^
4 + 3*a^4*b^2)^(1/2)*81i - a^2*b^4*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^
4 + 3*a^4*b^2)^(3/2)*116i + a^4*b^2*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b
^4 + 3*a^4*b^2)^(3/2)*72i + a^2*b^10*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*
b^4 + 3*a^4*b^2)^(1/2)*148i - a^4*b^8*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2
*b^4 + 3*a^4*b^2)^(1/2)*460i + a^6*b^6*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^
2*b^4 + 3*a^4*b^2)^(1/2)*577i - a^8*b^4*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a
^2*b^4 + 3*a^4*b^2)^(1/2)*368i + a^10*b^2*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3
*a^2*b^4 + 3*a^4*b^2)^(1/2)*120i + a*b^5*cos(c/2 + (d*x)/2)*(b^6 - a^6 - 3*
a^2*b^4 + 3*a^4*b^2)^(3/2)*32i + a^5*b*cos(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^
```

```
2*b^4 + 3*a^4*b^2)^(3/2)*14i + a^11*b*cos(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2
*b^4 + 3*a^4*b^2)^(1/2)*14i)/(64*b^15*sin(c/2 + (d*x)/2) + 32*a*b^14*cos(c/
2 + (d*x)/2) - 120*a^3*b^12*cos(c/2 + (d*x)/2) + 180*a^5*b^10*cos(c/2 + (d*
x)/2) - 137*a^7*b^8*cos(c/2 + (d*x)/2) + 54*a^9*b^6*cos(c/2 + (d*x)/2) - 9*
a^11*b^4*cos(c/2 + (d*x)/2) - 256*a^2*b^13*sin(c/2 + (d*x)/2) + 416*a^4*b^1
1*sin(c/2 + (d*x)/2) - 351*a^6*b^9*sin(c/2 + (d*x)/2) + 161*a^8*b^7*sin(c/2
 + (d*x)/2) - 37*a^10*b^5*sin(c/2 + (d*x)/2) + 3*a^12*b^3*sin(c/2 + (d*x)/2
)))*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2)*2i)/(a*b^3*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**3*cot(d*x+c)/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.337 $\int \frac{(e+fx)^3 \cos(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=852

$$\frac{ib(e+fx)^4}{4a^2f}+\frac{i\left(a^2-b^2\right)(e+fx)^4}{4a^2bf}-\frac{\csc(c+dx)(e+fx)^3}{ad}-\frac{\left(a^2-b^2\right)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)(e+fx)^3}{a^2bd}-\frac{\left(a^2-b^2\right)\log\left(1\right.}{}$$

```
[Out] 1/4*I*b*(f*x+e)^4/a^2/f+3*I*(a^2-b^2)*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+
c))/(a+(a^2-b^2)^(1/2)))/a^2/b/d^2-6*f*(f*x+e)^2*arctanh(exp(I*(d*x+c)))/a/
d^2-(f*x+e)^3*csc(d*x+c)/a/d-b*(f*x+e)^3*ln(1-exp(2*I*(d*x+c)))/a^2/d-(a^2-
b^2)*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b/d-(a^2-b^
2)*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b/d-6*I*(a^2-
b^2)*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b/d^4-6*I*(a
^2-b^2)*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b/d^4-3/4
*I*b*f^3*polylog(4,exp(2*I*(d*x+c)))/a^2/d^4-6*I*f^2*(f*x+e)*polylog(2,exp(
I*(d*x+c)))/a/d^3+3/2*I*b*f*(f*x+e)^2*polylog(2,exp(2*I*(d*x+c)))/a^2/d^2-6
*f^3*polylog(3,-exp(I*(d*x+c)))/a/d^4+6*f^3*polylog(3,exp(I*(d*x+c)))/a/d^4
-3/2*b*f^2*(f*x+e)*polylog(3,exp(2*I*(d*x+c)))/a^2/d^3-6*(a^2-b^2)*f^2*(f*x
+e)*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b/d^3-6*(a^2-b^2)
*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b/d^3+6*
I*f^2*(f*x+e)*polylog(2,-exp(I*(d*x+c)))/a/d^3+1/4*I*(a^2-b^2)*(f*x+e)^4/a^
2/b/f+3*I*(a^2-b^2)*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(
1/2)))/a^2/b/d^2
```

Rubi [A] time = 1.78, antiderivative size = 852, normalized size of antiderivative = 1.00, number of steps used = 48, number of rules used = 19, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.559, Rules used = {4543, 4408, 3296, 2638, 4410, 4183, 2531, 2282, 6589, 4404, 3311, 32, 2635, 8, 3717, 2190, 6609, 4525, 4519}

$$\frac{ib(e+fx)^4}{4a^2f}+\frac{i\left(a^2-b^2\right)(e+fx)^4}{4a^2bf}-\frac{\csc(c+dx)(e+fx)^3}{ad}-\frac{\left(a^2-b^2\right)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)(e+fx)^3}{a^2bd}-\frac{\left(a^2-b^2\right)\log\left(1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x]*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((I/4)*b*(e + f*x)^4)/(a^2*f) + ((I/4)*(a^2 - b^2)*(e + f*x)^4)/(a^2*b*f) -
 (6*f*(e + f*x)^2*ArcTanh[E^(I*(c + d*x))])/(a*d^2) - ((e + f*x)^3*Csc[c +
d*x])/(a*d) - ((a^2 - b^2)*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a - S
qrt[a^2 - b^2])])/(a^2*b*d) - ((a^2 - b^2)*(e + f*x)^3*Log[1 - (I*b*E^(I*(c
 + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b*d) - (b*(e + f*x)^3*Log[1 - E^((2*
I)*(c + d*x))])/(a^2*d) + ((6*I)*f^2*(e + f*x)*PolyLog[2, -E^(I*(c + d*x))]
```

```
)/(a*d^3) - ((6*I)*f^2*(e + f*x)*PolyLog[2, E^(I*(c + d*x))])/(a*d^3) + ((3
*I)*(a^2 - b^2)*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^
2 - b^2])])/(a^2*b*d^2) + ((3*I)*(a^2 - b^2)*f*(e + f*x)^2*PolyLog[2, (I*b*
E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b*d^2) + (((3*I)/2)*b*f*(e +
f*x)^2*PolyLog[2, E^((2*I)*(c + d*x))])/(a^2*d^2) - (6*f^3*PolyLog[3, -E^(I
*(c + d*x))])/(a*d^4) + (6*f^3*PolyLog[3, E^(I*(c + d*x))])/(a*d^4) - (6*(a
^2 - b^2)*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^
2])])/(a^2*b*d^3) - (6*(a^2 - b^2)*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c +
d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b*d^3) - (3*b*f^2*(e + f*x)*PolyLog[3,
E^((2*I)*(c + d*x))])/(2*a^2*d^3) - ((6*I)*(a^2 - b^2)*f^3*PolyLog[4, (I*b*
E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b*d^4) - ((6*I)*(a^2 - b^2)*f
^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b*d^4) - (
((3*I)/4)*b*f^3*PolyLog[4, E^((2*I)*(c + d*x))])/(a^2*d^4)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4410

```
Int[Cot[(a_.) + (b_.)*(x_)]^(p_.)*Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csc[a + b*x]^n)/(b*n), x]
+ Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csc[a + b*x]^n, x], x] /; FreeQ[{
a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
```

```
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\cos(c+dx)\cot^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}}{a}$$

$$= -\frac{\int (e+fx)^3\cos(c+dx)\,dx}{a} + \frac{\int (e+fx)^3\cot(c+dx)\csc(c+dx)\,dx}{a}$$

$$= -\frac{(e+fx)^3\csc(c+dx)}{ad} - \frac{(e+fx)^3\sin(c+dx)}{ad} + \frac{\int (e+fx)^3\cos(c+}{a}$$

$$= \frac{ib(e+fx)^4}{4a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4bf} - \frac{6f(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - $$

$$= \frac{ib(e+fx)^4}{4a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4bf} - \frac{6f(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - $$

$$= \frac{ib(e+fx)^4}{4a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4bf} - \frac{6f(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} + $$

$$= \frac{ib(e+fx)^4}{4a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4bf} - \frac{6f(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - $$

$$= \frac{ib(e+fx)^4}{4a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4bf} - \frac{6f(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - $$

$$= \frac{ib(e+fx)^4}{4a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4bf} - \frac{6f(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - $$

Mathematica [B] time = 49.18, size = 2974, normalized size = 3.49

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x]*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/2*(((-I)*b*(e + f*x)^4)/((-1 + E^((2*I)*c))*f) + (6*e*f*(b*d*e - 2*a*f)*
x*Log[1 - E^((-I)*(c + d*x))])/d^2 + (6*f^2*(b*d*e - a*f)*x^2*Log[1 - E^((-
I)*(c + d*x))])/d^2 + (2*b*f^3*x^3*Log[1 - E^((-I)*(c + d*x))])/d + (6*e*f*
(b*d*e + 2*a*f)*x*Log[1 + E^((-I)*(c + d*x))])/d^2 + (6*f^2*(b*d*e + a*f)*x
^2*Log[1 + E^((-I)*(c + d*x))])/d^2 + (2*b*f^3*x^3*Log[1 + E^((-I)*(c + d*x
```

))])/d + (2*e^2*(b*d*e - 3*a*f)*((-I)*d*x + Log[1 - E^(I*(c + d*x))]))/d^2 + (2*e^2*(b*d*e + 3*a*f)*((-I)*d*x + Log[1 + E^(I*(c + d*x))]))/d^2 + ((6*I)*e*f*(b*d*e + 2*a*f)*PolyLog[2, -E^((-I)*(c + d*x))])/d^3 + ((6*I)*e*f*(b*d*e - 2*a*f)*PolyLog[2, E^((-I)*(c + d*x))])/d^3 + (12*f^2*(b*d*e + a*f)*(I*d*x*PolyLog[2, -E^((-I)*(c + d*x))] + PolyLog[3, -E^((-I)*(c + d*x))]))/d^4 + (12*f^2*(b*d*e - a*f)*(I*d*x*PolyLog[2, E^((-I)*(c + d*x))] + PolyLog[3, E^((-I)*(c + d*x))]))/d^4 + (6*b*f^3*(I*d^2*x^2*PolyLog[2, -E^((-I)*(c + d*x))] + 2*d*x*PolyLog[3, -E^((-I)*(c + d*x))] - (2*I)*PolyLog[4, -E^((-I)*(c + d*x))]))/d^4 + (6*b*f^3*(I*d^2*x^2*PolyLog[2, E^((-I)*(c + d*x))] + 2*d*x*PolyLog[3, E^((-I)*(c + d*x))] - (2*I)*PolyLog[4, E^((-I)*(c + d*x))]))/d^4)/a^2 + ((a^2 - b^2)*((4*I)*d^4*e^3*E^((2*I)*c)*x + (6*I)*d^4*e^2*E^((2*I)*c)*f*x^2 + (4*I)*d^4*e*E^((2*I)*c)*f^2*x^3 + I*d^4*E^((2*I)*c)*f^3*x^4 + (2*I)*d^3*e^3*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c + d*x))))] - (2*I)*d^3*e^3*E^((2*I)*c)*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c + d*x))))] + d^3*e^3*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2] - d^3*e^3*E^((2*I)*c)*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c + d*x)))^2] + 6*d^3*e^2*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^3*e^2*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^3*e*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 2*d^3*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 2*d^3*E^((2*I)*c)*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e^2*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^3*e^2*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^3*e*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 2*d^3*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 2*d^3*E^((2*I)*c)*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + (6*I)*d^2*(-1 + E^((2*I)*c))*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + (6*I)*d^2*(-1 + E^((2*I)*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + 12*d*e*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*d*e*E^((2*I)*c)*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*d*f^3*x*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*d*E^((2*I)*c)*f^3*x*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*d*e*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] - 12*d*e*E^((2*I)*c)*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + 12*d*f^3*x*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqr

```
t[(-a^2 + b^2)*E^((2*I)*c)]))] - 12*d*E^((2*I)*c)*f^3*x*PolyLog[3, -((b*E^(
I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + (12*I)*f
^3*PolyLog[4, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((
2*I)*c)])] - (12*I)*E^((2*I)*c)*f^3*PolyLog[4, (I*b*E^(I*(2*c + d*x)))/(a*E
^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + (12*I)*f^3*PolyLog[4, -((b*E^
(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] - (12*I)*
E^((2*I)*c)*f^3*PolyLog[4, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^
2 + b^2)*E^((2*I)*c)]))]))/(2*a^2*b*d^4*(-1 + E^((2*I)*c))) + ((-4*b*e^3 -
12*b*e^2*f*x - 12*b*e*f^2*x^2 - 4*b*f^3*x^3 - 4*a*d*e^3*x*Cos[c] - 6*a*d*e^
2*f*x^2*Cos[c] - 4*a*d*e*f^2*x^3*Cos[c] - a*d*f^3*x^4*Cos[c])*Csc[c/2]*Sec[
c/2])/(8*a*b*d) + (Sec[c/2]*Sec[c/2 + (d*x)/2]*(-(e^3*Sin[(d*x)/2]) - 3*e^2
*f*x*Sin[(d*x)/2] - 3*e*f^2*x^2*Sin[(d*x)/2] - f^3*x^3*Sin[(d*x)/2]))/(2*a*
d) + (Csc[c/2]*Csc[c/2 + (d*x)/2]*(e^3*Sin[(d*x)/2] + 3*e^2*f*x*Sin[(d*x)/2
] + 3*e*f^2*x^2*Sin[(d*x)/2] + f^3*x^3*Sin[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 0.90, size = 3923, normalized size = 4.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -1/2*(2*a*b*d^3*f^3*x^3 + 6*a*b*d^3*e*f^2*x^2 + 6*a*b*d^3*e^2*f*x + 2*a*b*d
^3*e^3 + 6*I*b^2*f^3*polylog(4, cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c)
 - 6*I*b^2*f^3*polylog(4, cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 6*I
*b^2*f^3*polylog(4, -cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 6*I*b^2*
f^3*polylog(4, -cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + 6*I*(a^2 - b^
2)*f^3*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x
 + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 6*I*(a^
2 - b^2)*f^3*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*c
os(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - 6
*I*(a^2 - b^2)*f^3*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) +
 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x +
 c) - 6*I*(a^2 - b^2)*f^3*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x
 + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*si
n(d*x + c) - (-3*I*(a^2 - b^2)*d^2*f^3*x^2 - 6*I*(a^2 - b^2)*d^2*e*f^2*x -
3*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c
) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b +
 1)*sin(d*x + c) - (-3*I*(a^2 - b^2)*d^2*f^3*x^2 - 6*I*(a^2 - b^2)*d^2*e*f^
2*x - 3*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d
*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*
b)/b + 1)*sin(d*x + c) - (3*I*(a^2 - b^2)*d^2*f^3*x^2 + 6*I*(a^2 - b^2)*d^2
*e*f^2*x + 3*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a
*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
```

```
) + 2*b)/b + 1)*sin(d*x + c) - (3*I*(a^2 - b^2)*d^2*f^3*x^2 + 6*I*(a^2 - b^
2)*d^2*e*f^2*x + 3*I*(a^2 - b^2)*d^2*e^2*f)*dilog(-1/2*(-2*I*a*cos(d*x + c)
 + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^
2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - (3*I*b^2*d^2*f^3*x^2 + 3*I*b^2*d^2*e^2
*f - 6*I*a*b*d*e*f^2 + 6*I*(b^2*d^2*e*f^2 - a*b*d*f^3)*x)*dilog(cos(d*x + c
) + I*sin(d*x + c))*sin(d*x + c) - (-3*I*b^2*d^2*f^3*x^2 - 3*I*b^2*d^2*e^2*
f + 6*I*a*b*d*e*f^2 - 6*I*(b^2*d^2*e*f^2 - a*b*d*f^3)*x)*dilog(cos(d*x + c)
 - I*sin(d*x + c))*sin(d*x + c) - (-3*I*b^2*d^2*f^3*x^2 - 3*I*b^2*d^2*e^2*f
 - 6*I*a*b*d*e*f^2 - 6*I*(b^2*d^2*e*f^2 + a*b*d*f^3)*x)*dilog(-cos(d*x + c)
 + I*sin(d*x + c))*sin(d*x + c) - (3*I*b^2*d^2*f^3*x^2 + 3*I*b^2*d^2*e^2*f
+ 6*I*a*b*d*e*f^2 + 6*I*(b^2*d^2*e*f^2 + a*b*d*f^3)*x)*dilog(-cos(d*x + c)
- I*sin(d*x + c))*sin(d*x + c) + ((a^2 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2
*e^2*f + 3*(a^2 - b^2)*c^2*d*e*f^2 - (a^2 - b^2)*c^3*f^3)*log(2*b*cos(d*x +
 c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c)
 + ((a^2 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2*e^2*f + 3*(a^2 - b^2)*c^2*d*e
*f^2 - (a^2 - b^2)*c^3*f^3)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b
*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) + ((a^2 - b^2)*d^3*e^3 - 3*(a
^2 - b^2)*c*d^2*e^2*f + 3*(a^2 - b^2)*c^2*d*e*f^2 - (a^2 - b^2)*c^3*f^3)*lo
g(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I
*a)*sin(d*x + c) + ((a^2 - b^2)*d^3*e^3 - 3*(a^2 - b^2)*c*d^2*e^2*f + 3*(a^
2 - b^2)*c^2*d*e*f^2 - (a^2 - b^2)*c^3*f^3)*log(-2*b*cos(d*x + c) - 2*I*b*s
in(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) + ((a^2 - b^
2)*d^3*f^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x +
3*(a^2 - b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)*c^2*d*e*f^2 + (a^2 - b^2)*c^3*f^3
)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*
sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + ((a^2 - b^2)*
d^3*f^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + 3*(
a^2 - b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)*c^2*d*e*f^2 + (a^2 - b^2)*c^3*f^3)*l
og(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin
(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + ((a^2 - b^2)*d^3
*f^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + 3*(a^2
 - b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)*c^2*d*e*f^2 + (a^2 - b^2)*c^3*f^3)*log(
1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d
*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + ((a^2 - b^2)*d^3*f
^3*x^3 + 3*(a^2 - b^2)*d^3*e*f^2*x^2 + 3*(a^2 - b^2)*d^3*e^2*f*x + 3*(a^2 -
 b^2)*c*d^2*e^2*f - 3*(a^2 - b^2)*c^2*d*e*f^2 + (a^2 - b^2)*c^3*f^3)*log(1/
2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + (b^2*d^3*f^3*x^3 + b
^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*(b^2*d^3*e*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2
*d^3*e^2*f + 2*a*b*d^2*e*f^2)*x)*log(cos(d*x + c) + I*sin(d*x + c) + 1)*sin
(d*x + c) + (b^2*d^3*f^3*x^3 + b^2*d^3*e^3 + 3*a*b*d^2*e^2*f + 3*(b^2*d^3*e
*f^2 + a*b*d^2*f^3)*x^2 + 3*(b^2*d^3*e^2*f + 2*a*b*d^2*e*f^2)*x)*log(cos(d*
x + c) - I*sin(d*x + c) + 1)*sin(d*x + c) + (b^2*d^3*e^3 - 3*(b^2*c + a*b)*
d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 - (b^2*c^3 + 3*a*b*c^2)*f^3)*log(
-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) + (b^2*d^3*e^3 -
```

```
 3*(b^2*c + a*b)*d^2*e^2*f + 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 - (b^2*c^3 + 3*a
*b*c^2)*f^3)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c)
 + (b^2*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f^2 + (
b^2*c^3 + 3*a*b*c^2)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(b^2*d^3
*e^2*f - 2*a*b*d^2*e*f^2)*x)*log(-cos(d*x + c) + I*sin(d*x + c) + 1)*sin(d*
x + c) + (b^2*d^3*f^3*x^3 + 3*b^2*c*d^2*e^2*f - 3*(b^2*c^2 + 2*a*b*c)*d*e*f
^2 + (b^2*c^3 + 3*a*b*c^2)*f^3 + 3*(b^2*d^3*e*f^2 - a*b*d^2*f^3)*x^2 + 3*(b
^2*d^3*e^2*f - 2*a*b*d^2*e*f^2)*x)*log(-cos(d*x + c) - I*sin(d*x + c) + 1)*
sin(d*x + c) + 6*((a^2 - b^2)*d*f^3*x + (a^2 - b^2)*d*e*f^2)*polylog(3, 1/2
*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 6*((a^2 - b^2)*d*f^3*x + (a^
2 - b^2)*d*e*f^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2
*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c
) + 6*((a^2 - b^2)*d*f^3*x + (a^2 - b^2)*d*e*f^2)*polylog(3, 1/2*(-2*I*a*co
s(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 6*((a^2 - b^2)*d*f^3*x + (a^2 - b^2)*d
*e*f^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d
*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 6*(b^
2*d*f^3*x + b^2*d*e*f^2 - a*b*f^3)*polylog(3, cos(d*x + c) + I*sin(d*x + c)
)*sin(d*x + c) + 6*(b^2*d*f^3*x + b^2*d*e*f^2 - a*b*f^3)*polylog(3, cos(d*x
 + c) - I*sin(d*x + c))*sin(d*x + c) + 6*(b^2*d*f^3*x + b^2*d*e*f^2 + a*b*f
^3)*polylog(3, -cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 6*(b^2*d*f^3*
x + b^2*d*e*f^2 + a*b*f^3)*polylog(3, -cos(d*x + c) - I*sin(d*x + c))*sin(d
*x + c))/(a^2*b*d^4*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

maple [F] time = 7.30, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \cos \left(dx+c\right) \left(\cot^{2}\left(dx+c\right)\right)}{a+b \sin \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*cot(c + d*x)^2*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^{3} \cos\left(c + dx\right) \cot^{2}\left(c + dx\right)}{a + b \sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*cos(c + d*x)*cot(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.338 $\int \frac{(e+fx)^2\cos(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=616

$$-\frac{2f^2\left(a^2-b^2\right)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2bd^3}-\frac{2f^2\left(a^2-b^2\right)\mathrm{Li}_3\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{a^2bd^3}+\frac{2if\left(a^2-b^2\right)(e+fx)\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2bd^2}+\frac{2if\left(a^2-b^2\right.}{}$$

```
[Out] 1/3*I*b*(f*x+e)^3/a^2/f+1/3*I*(a^2-b^2)*(f*x+e)^3/a^2/b/f-4*f*(f*x+e)*arcta
nh(exp(I*(d*x+c)))/a/d^2-(f*x+e)^2*csc(d*x+c)/a/d-b*(f*x+e)^2*ln(1-exp(2*I*
(d*x+c)))/a^2/d-(a^2-b^2)*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1
/2)))/a^2/b/d-(a^2-b^2)*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2
)))/a^2/b/d+2*I*f^2*polylog(2,-exp(I*(d*x+c)))/a/d^3-2*I*f^2*polylog(2,exp(
I*(d*x+c)))/a/d^3+I*b*f*(f*x+e)*polylog(2,exp(2*I*(d*x+c)))/a^2/d^2+2*I*(a^
2-b^2)*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b/d^
2+2*I*(a^2-b^2)*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))
/a^2/b/d^2-1/2*b*f^2*polylog(3,exp(2*I*(d*x+c)))/a^2/d^3-2*(a^2-b^2)*f^2*po
lylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b/d^3-2*(a^2-b^2)*f^2*p
olylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b/d^3
```

Rubi [A] time = 1.39, antiderivative size = 616, normalized size of antiderivative = 1.00, number of steps used = 37, number of rules used = 17, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4543, 4408, 3296, 2637, 4410, 4183, 2279, 2391, 4404, 3310, 3717, 2190, 2531, 2282, 6589, 4525, 4519}

$$\frac{2if\left(a^2-b^2\right)(e+fx)\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2bd^2}+\frac{2if\left(a^2-b^2\right)(e+fx)\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{a^2bd^2}-\frac{2f^2\left(a^2-b^2\right)\mathrm{PolyL}}{a^2b}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x]*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((I/3)*b*(e + f*x)^3)/(a^2*f) + ((I/3)*(a^2 - b^2)*(e + f*x)^3)/(a^2*b*f) -
 (4*f*(e + f*x)*ArcTanh[E^(I*(c + d*x))])/(a*d^2) - ((e + f*x)^2*Csc[c + d*
x])/(a*d) - ((a^2 - b^2)*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqr
t[a^2 - b^2])])/(a^2*b*d) - ((a^2 - b^2)*(e + f*x)^2*Log[1 - (I*b*E^(I*(c +
 d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b*d) - (b*(e + f*x)^2*Log[1 - E^((2*I)
*(c + d*x))])/(a^2*d) + ((2*I)*f^2*PolyLog[2, -E^(I*(c + d*x))])/(a*d^3) -
((2*I)*f^2*PolyLog[2, E^(I*(c + d*x))])/(a*d^3) + ((2*I)*(a^2 - b^2)*f*(e +
 f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b*d^2)
+ ((2*I)*(a^2 - b^2)*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt
[a^2 - b^2])])/(a^2*b*d^2) + (I*b*f*(e + f*x)*PolyLog[2, E^((2*I)*(c + d*x)
)])/(a^2*d^2) - (2*(a^2 - b^2)*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sq
```

```
rt[a^2 - b^2])])/(a^2*b*d^3) - (2*(a^2 - b^2)*f^2*PolyLog[3, (I*b*E^(I*(c +
 d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b*d^3) - (b*f^2*PolyLog[3, E^((2*I)*(c
 + d*x))])/(2*a^2*d^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4410

```
Int[Cot[(a_.) + (b_.)*(x_)]^(p_.)*Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csc[a + b*x]^n)/(b*n), x]
```

```
+ Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csc[a + b*x]^n, x], x] /; FreeQ[{
a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\cos(c+dx)\cot^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}}{a}$$

$$= -\frac{\int (e+fx)^2\cos(c+dx)\,dx}{a} + \frac{\int (e+fx)^2\cot(c+dx)\csc(c+dx)\,dx}{a}$$

$$= -\frac{(e+fx)^2\csc(c+dx)}{ad} - \frac{(e+fx)^2\sin(c+dx)}{ad} + \frac{\int (e+fx)^2\cos(c+}{a}$$

$$= \frac{ib(e+fx)^3}{3a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3bf} - \frac{4f(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - 2$$

$$= \frac{ib(e+fx)^3}{3a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3bf} - \frac{4f(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - (e$$

$$= \frac{ib(e+fx)^3}{3a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3bf} - \frac{4f(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - (e$$

$$= \frac{ib(e+fx)^3}{3a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3bf} - \frac{4f(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - (e$$

$$= \frac{ib(e+fx)^3}{3a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3bf} - \frac{4f(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - (e$$

Mathematica [B] time = 14.23, size = 1833, normalized size = 2.98

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x]*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (((2*I)*b*(e + f*x)^3)/((-1 + E^((2*I)*c))*f) + (6*f*(-(b*d*e) + a*f)*x*Log
[1 - E^((-I)*(c + d*x))])/d^2 - (3*b*f^2*x^2*Log[1 - E^((-I)*(c + d*x))])/d
 - (6*f*(b*d*e + a*f)*x*Log[1 + E^((-I)*(c + d*x))])/d^2 - (3*b*f^2*x^2*Log
[1 + E^((-I)*(c + d*x))])/d + ((3*I)*e*(b*d*e - 2*a*f)*(d*x + I*Log[1 - E^(
I*(c + d*x))]))/d^2 + ((3*I)*e*(b*d*e + 2*a*f)*(d*x + I*Log[1 + E^(I*(c + d
*x))]))/d^2 - ((6*I)*f*(b*d*e + a*f)*PolyLog[2, -E^((-I)*(c + d*x))])/d^3 +
 ((6*I)*f*(-(b*d*e) + a*f)*PolyLog[2, E^((-I)*(c + d*x))])/d^3 - ((6*I)*b*f
^2*(d*x*PolyLog[2, -E^((-I)*(c + d*x))] - I*PolyLog[3, -E^((-I)*(c + d*x))]
```

```
))/d^3 - ((6*I)*b*f^2*(d*x*PolyLog[2, E^((-I)*(c + d*x))] - I*PolyLog[3, E^
((-I)*(c + d*x))]))/d^3)/(3*a^2) + ((a^2 - b^2)*((12*I)*d^3*e^2*E^((2*I)*c)
*x + (12*I)*d^3*e*E^((2*I)*c)*f*x^2 + (4*I)*d^3*E^((2*I)*c)*f^2*x^3 + (6*I)
*d^2*e^2*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c + d*x))))] - (6*
I)*d^2*e^2*E^((2*I)*c)*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c +
d*x))))] + 3*d^2*e^2*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c
+ d*x)))^2] - 3*d^2*e^2*E^((2*I)*c)*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1
 + E^((2*I)*(c + d*x)))^2] + 12*d^2*e*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*
a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*d^2*e*E^((2*I)*c)*f*x*Log
[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])]
+ 6*d^2*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b
^2)*E^((2*I)*c)])] - 6*d^2*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x))
)/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*d^2*e*f*x*Log[1 + (b
*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*d^
2*e*E^((2*I)*c)*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2
 + b^2)*E^((2*I)*c)])] + 6*d^2*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E
^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 6*d^2*E^((2*I)*c)*f^2*x^2*Log[1
 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] +
(12*I)*d*(-1 + E^((2*I)*c))*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(2*c + d*x)))/
(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + (12*I)*d*(-1 + E^((2*I)*c
))*f*(e + f*x)*PolyLog[2, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2
 + b^2)*E^((2*I)*c)]))] + 12*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I
*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*E^((2*I)*c)*f^2*PolyLog[3, (I
*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*
f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^(
(2*I)*c)]))] - 12*E^((2*I)*c)*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E
^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))]))/(6*a^2*b*d^3*(-1 + E^((2*I)*c)
)) + ((-3*b*e^2 - 6*b*e*f*x - 3*b*f^2*x^2 - 3*a*d*e^2*x*Cos[c] - 3*a*d*e*f*
x^2*Cos[c] - a*d*f^2*x^3*Cos[c])*Csc[c/2]*Sec[c/2])/(6*a*b*d) + (Sec[c/2]*S
ec[c/2 + (d*x)/2]*(-(e^2*Sin[(d*x)/2]) - 2*e*f*x*Sin[(d*x)/2] - f^2*x^2*Sin
[(d*x)/2]))/(2*a*d) + (Csc[c/2]*Csc[c/2 + (d*x)/2]*(e^2*Sin[(d*x)/2] + 2*e*
f*x*Sin[(d*x)/2] + f^2*x^2*Sin[(d*x)/2]))/(2*a*d)
```

fricas [C] time = 0.71, size = 2543, normalized size = 4.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -1/2*(2*a*b*d^2*f^2*x^2 + 4*a*b*d^2*e*f*x + 2*a*b*d^2*e^2 + 2*b^2*f^2*polyl
og(3, cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 2*b^2*f^2*polylog(3, co
s(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + 2*b^2*f^2*polylog(3, -cos(d*x +
 c) + I*sin(d*x + c))*sin(d*x + c) + 2*b^2*f^2*polylog(3, -cos(d*x + c) - I
```

```
*sin(d*x + c))*sin(d*x + c) + 2*(a^2 - b^2)*f^2*polylog(3, 1/2*(2*I*a*cos(d
*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2))/b)*sin(d*x + c) + 2*(a^2 - b^2)*f^2*polylog(3, 1/2*(2*I*a*c
os(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 2*(a^2 - b^2)*f^2*polylog(3, 1/2*(-2*
I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 2*(a^2 - b^2)*f^2*polylog(3, 1/2
*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - (-2*I*(a^2 - b^2)*d*f^2*x -
 2*I*(a^2 - b^2)*d*e*f)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) +
 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)
*sin(d*x + c) - (-2*I*(a^2 - b^2)*d*f^2*x - 2*I*(a^2 - b^2)*d*e*f)*dilog(-1
/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - (2*I*(a^2 - b^2)
*d*f^2*x + 2*I*(a^2 - b^2)*d*e*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin
(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) +
2*b)/b + 1)*sin(d*x + c) - (2*I*(a^2 - b^2)*d*f^2*x + 2*I*(a^2 - b^2)*d*e*f
)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) +
I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - (2*I*
b^2*d*f^2*x + 2*I*b^2*d*e*f - 2*I*a*b*f^2)*dilog(cos(d*x + c) + I*sin(d*x +
 c))*sin(d*x + c) - (-2*I*b^2*d*f^2*x - 2*I*b^2*d*e*f + 2*I*a*b*f^2)*dilog(
cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - (-2*I*b^2*d*f^2*x - 2*I*b^2*d
*e*f - 2*I*a*b*f^2)*dilog(-cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) - (2
*I*b^2*d*f^2*x + 2*I*b^2*d*e*f + 2*I*a*b*f^2)*dilog(-cos(d*x + c) - I*sin(d
*x + c))*sin(d*x + c) + ((a^2 - b^2)*d^2*e^2 - 2*(a^2 - b^2)*c*d*e*f + (a^2
 - b^2)*c^2*f^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2
 - b^2)/b^2) + 2*I*a)*sin(d*x + c) + ((a^2 - b^2)*d^2*e^2 - 2*(a^2 - b^2)*c
*d*e*f + (a^2 - b^2)*c^2*f^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2
*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) + ((a^2 - b^2)*d^2*e^2 - 2*
(a^2 - b^2)*c*d*e*f + (a^2 - b^2)*c^2*f^2)*log(-2*b*cos(d*x + c) + 2*I*b*si
n(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) + ((a^2 - b^2
)*d^2*e^2 - 2*(a^2 - b^2)*c*d*e*f + (a^2 - b^2)*c^2*f^2)*log(-2*b*cos(d*x +
 c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c)
 + ((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2)*d^2*e*f*x + 2*(a^2 - b^2)*c*d*e
*f - (a^2 - b^2)*c^2*f^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) +
2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(
d*x + c) + ((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2)*d^2*e*f*x + 2*(a^2 - b^
2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x
 + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)
/b)*sin(d*x + c) + ((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2)*d^2*e*f*x + 2*(
a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*
a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2) + 2*b)/b)*sin(d*x + c) + ((a^2 - b^2)*d^2*f^2*x^2 + 2*(a^2 - b^2)*d^2*e*
f*x + 2*(a^2 - b^2)*c*d*e*f - (a^2 - b^2)*c^2*f^2)*log(1/2*(-2*I*a*cos(d*x
+ c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2
```

```
- b^2)/b^2) + 2*b)/b)*sin(d*x + c) + (b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b
*d*e*f + 2*(b^2*d^2*e*f + a*b*d*f^2)*x)*log(cos(d*x + c) + I*sin(d*x + c) +
 1)*sin(d*x + c) + (b^2*d^2*f^2*x^2 + b^2*d^2*e^2 + 2*a*b*d*e*f + 2*(b^2*d^
2*e*f + a*b*d*f^2)*x)*log(cos(d*x + c) - I*sin(d*x + c) + 1)*sin(d*x + c) +
 (b^2*d^2*e^2 - 2*(b^2*c + a*b)*d*e*f + (b^2*c^2 + 2*a*b*c)*f^2)*log(-1/2*c
os(d*x + c) + 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) + (b^2*d^2*e^2 - 2*(b^
2*c + a*b)*d*e*f + (b^2*c^2 + 2*a*b*c)*f^2)*log(-1/2*cos(d*x + c) - 1/2*I*s
in(d*x + c) + 1/2)*sin(d*x + c) + (b^2*d^2*f^2*x^2 + 2*b^2*c*d*e*f - (b^2*c
^2 + 2*a*b*c)*f^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x)*log(-cos(d*x + c) + I*si
n(d*x + c) + 1)*sin(d*x + c) + (b^2*d^2*f^2*x^2 + 2*b^2*c*d*e*f - (b^2*c^2
+ 2*a*b*c)*f^2 + 2*(b^2*d^2*e*f - a*b*d*f^2)*x)*log(-cos(d*x + c) - I*sin(d
*x + c) + 1)*sin(d*x + c))/(a^2*b*d^3*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

maple [F] time = 5.24, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \cos \left(dx+c\right) \left(\cot^{2}\left(dx+c\right)\right)}{a+b\sin \left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*cot(c + d*x)^2*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^{2} \cos\left(c + dx\right) \cot^{2}\left(c + dx\right)}{a + b\sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)**2*cos(c + d*x)*cot(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.339 $\int \frac{(e+fx)\cos(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=386

$$\frac{if\left(a^2-b^2\right)\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2bd^2}+\frac{if\left(a^2-b^2\right)\mathrm{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{a^2bd^2}-\frac{\left(a^2-b^2\right)(e+fx)\log\left(1-\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2bd}-\frac{\left(a^2-b^2\right)(e+fx)}{a}$$

```
[Out] 1/2*I*b*(f*x+e)^2/a^2/f+1/2*I*(a^2-b^2)*(f*x+e)^2/a^2/b/f-f*arctanh(cos(d*x
+c))/a/d^2-(f*x+e)*csc(d*x+c)/a/d-b*(f*x+e)*ln(1-exp(2*I*(d*x+c)))/a^2/d-(a
^2-b^2)*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b/d-(a^2-b
^2)*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b/d+1/2*I*b*f*
polylog(2,exp(2*I*(d*x+c)))/a^2/d^2+I*(a^2-b^2)*f*polylog(2,I*b*exp(I*(d*x+
c))/(a-(a^2-b^2)^(1/2)))/a^2/b/d^2+I*(a^2-b^2)*f*polylog(2,I*b*exp(I*(d*x+c
))/(a+(a^2-b^2)^(1/2)))/a^2/b/d^2
```

Rubi [A] time = 0.78, antiderivative size = 386, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 15, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.469, Rules used = {4543, 4408, 3296, 2638, 4410, 3770, 4404, 2635, 8, 3717, 2190, 2279, 2391, 4525, 4519}

$$\frac{if\left(a^2-b^2\right)\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2bd^2}+\frac{if\left(a^2-b^2\right)\mathrm{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{a^2bd^2}+\frac{ibf\mathrm{PolyLog}\left(2,e^{2i(c+dx)}\right)}{2a^2d^2}-\frac{\left(a^2-b^2\right)(e+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x]*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((I/2)*b*(e + f*x)^2)/(a^2*f) + ((I/2)*(a^2 - b^2)*(e + f*x)^2)/(a^2*b*f) -
 (f*ArcTanh[Cos[c + d*x]])/(a*d^2) - ((e + f*x)*Csc[c + d*x])/(a*d) - ((a^2
 - b^2)*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^
2*b*d) - ((a^2 - b^2)*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2
 - b^2])])/(a^2*b*d) - (b*(e + f*x)*Log[1 - E^((2*I)*(c + d*x))])/(a^2*d) +
 (I*(a^2 - b^2)*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/
(a^2*b*d^2) + (I*(a^2 - b^2)*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a
^2 - b^2])])/(a^2*b*d^2) + ((I/2)*b*f*PolyLog[2, E^((2*I)*(c + d*x))])/(a^2
*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4410

```
Int[Cot[(a_.) + (b_.)*(x_)]^(p_.)*Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csc[a + b*x]^n)/(b*n), x]
+ Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csc[a + b*x]^n, x], x] /; FreeQ[{
a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cos(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\cos(c+dx)\cot^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cos^2(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= -\frac{\int (e+fx)\cos(c+dx)\,dx}{a} + \frac{\int (e+fx)\cot(c+dx)\csc(c+dx)\,dx}{a} - \frac{b}{}$$

$$= -\frac{(e+fx)\csc(c+dx)}{ad} - \frac{(e+fx)\sin(c+dx)}{ad} + \frac{\int (e+fx)\cos(c+dx)}{a}$$

$$= \frac{ib(e+fx)^2}{2a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^2}{2bf} - \frac{f\tanh^{-1}(\cos(c+dx))}{ad^2} - \frac{f\cos(c}{ad^2}$$

$$= \frac{ib(e+fx)^2}{2a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^2}{2bf} - \frac{f\tanh^{-1}(\cos(c+dx))}{ad^2} - \frac{(e+fx)}{}$$

$$= \frac{ib(e+fx)^2}{2a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^2}{2bf} - \frac{f\tanh^{-1}(\cos(c+dx))}{ad^2} - \frac{(e+fx)}{}$$

$$= \frac{ib(e+fx)^2}{2a^2f} + \frac{i\left(1-\frac{b^2}{a^2}\right)(e+fx)^2}{2bf} - \frac{f\tanh^{-1}(\cos(c+dx))}{ad^2} - \frac{(e+fx)}{}$$

Mathematica [B] time = 14.90, size = 2314, normalized size = 5.99

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Cos[c + d*x]*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-(d*e*Cos[(c + d*x)/2]) + c*f*Cos[(c + d*x)/2] - f*(c + d*x)*Cos[(c + d*x
)/2])*Csc[(c + d*x)/2])/(2*a*d^2) - (b*e*Log[Sin[c + d*x]])/(a^2*d) + (b*c*
```

```
f*Log[Sin[c + d*x]])/(a^2*d^2) + (f*Log[Tan[(c + d*x)/2]])/(a*d^2) - (b*f*(
(c + d*x)*Log[1 - E^((2*I)*(c + d*x))] - (I/2)*((c + d*x)^2 + PolyLog[2, E^
((2*I)*(c + d*x))])))/(a^2*d^2) + (Sec[(c + d*x)/2]*(-(d*e*Sin[(c + d*x)/2]
) + c*f*Sin[(c + d*x)/2] - f*(c + d*x)*Sin[(c + d*x)/2]))/(2*a*d^2) + ((f*(
c + d*x)^2 + (2*I)*d*e*Log[Sec[(c + d*x)/2]^2] - (2*I)*c*f*Log[Sec[(c + d*x
)/2]^2] - (2*I)*d*e*Log[Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])] + (2*I)*c*
f*Log[Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])] - (4*I)*f*(c + d*x)*Log[(-2*
I)/(-I + Tan[(c + d*x)/2])] - 2*f*Log[1 + I*Tan[(c + d*x)/2]]*Log[(b - Sqrt
[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])] + 2*f*Log[
1 - I*Tan[(c + d*x)/2]]*Log[-((b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(
I*a - b + Sqrt[-a^2 + b^2]))] + 2*f*Log[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sq
rt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])] - 2*f
*Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]
)/(I*a + b + Sqrt[-a^2 + b^2])] + 4*f*PolyLog[2, -Cos[c + d*x] + I*Sin[c +
d*x]] + 2*f*PolyLog[2, (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 +
 b^2]))] - 2*f*PolyLog[2, (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^
2 + b^2]))] + 2*f*PolyLog[2, (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^
2 + b^2])] - 2*f*PolyLog[2, (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a
^2 + b^2]))])*(-((e*Cos[c + d*x])/(a + b*Sin[c + d*x])) + (b^2*e*Cos[c + d*
x])/(a^2*(a + b*Sin[c + d*x])) + (c*f*Cos[c + d*x])/(d*(a + b*Sin[c + d*x])
) - (b^2*c*f*Cos[c + d*x])/(a^2*d*(a + b*Sin[c + d*x])) - (f*(c + d*x)*Cos[
c + d*x])/(d*(a + b*Sin[c + d*x])) + (b^2*f*(c + d*x)*Cos[c + d*x])/(a^2*d*
(a + b*Sin[c + d*x]))))/(d*(2*f*(c + d*x) - (4*I)*f*Log[(-2*I)/(-I + Tan[(c
 + d*x)/2])] - (4*f*Log[1 + Cos[c + d*x] - I*Sin[c + d*x]]*(I*Cos[c + d*x]
+ Sin[c + d*x]))/(-Cos[c + d*x] + I*Sin[c + d*x]) + (I*f*Log[1 - (a*(1 - I*
Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 -
 I*Tan[(c + d*x)/2]) - (I*f*Log[-((b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2
])/(I*a - b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/
2]) - (I*f*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((-I)*a + b + Sq
rt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) + (I*f*Log[1
- (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x
)/2]^2)/(1 + I*Tan[(c + d*x)/2]) - (I*f*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(
c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(
c + d*x)/2]) - (I*f*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a +
b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) + (2*I)
*d*e*Tan[(c + d*x)/2] - (2*I)*c*f*Tan[(c + d*x)/2] + ((2*I)*f*(c + d*x)*Sec
[(c + d*x)/2]^2)/(-I + Tan[(c + d*x)/2]) - (f*Log[1 - (a*(I + Tan[(c + d*x)
/2]))/(I*a - b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(I + Tan[(c + d*x)/
2]) + (I*a*f*Log[1 - (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^
2]))]*Sec[(c + d*x)/2]^2)/(a + I*a*Tan[(c + d*x)/2]) + (a*f*Log[1 - I*Tan[(
c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]
) - (a*f*Log[1 + I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b - Sqrt[-a^2 + b
^2] + a*Tan[(c + d*x)/2]) + (a*f*Log[1 - I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/
2]^2)/(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) - (a*f*Log[1 + I*Tan[(c +
 d*x)/2]]*Sec[(c + d*x)/2]^2)/(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) -
```

```
((2*I)*d*e*Cos[(c + d*x)/2]^2*(b*Cos[c + d*x]*Sec[(c + d*x)/2]^2 + Sec[(c
+ d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c + d*x)/2]))/(a + b*Sin[c + d*x]) +
((2*I)*c*f*Cos[(c + d*x)/2]^2*(b*Cos[c + d*x]*Sec[(c + d*x)/2]^2 + Sec[(c +
d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c + d*x)/2]))/(a + b*Sin[c + d*x])))
```

fricas [B] time = 0.71, size = 1427, normalized size = 3.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fr
icas")

[Out] -1/2*(2*a*b*d*f*x - I*b^2*f*dilog(cos(d*x + c) + I*sin(d*x + c))*sin(d*x +
c) + I*b^2*f*dilog(cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + I*b^2*f*di
log(-cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) - I*b^2*f*dilog(-cos(d*x +
 c) - I*sin(d*x + c))*sin(d*x + c) + 2*a*b*d*e + I*(a^2 - b^2)*f*dilog(-1/2
*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + I*(a^2 - b^2)*f*di
log(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*s
in(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - I*(a^2 - b
^2)*f*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c
) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - I
*(a^2 - b^2)*f*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x
 + c) + ((a^2 - b^2)*d*e - (a^2 - b^2)*c*f)*log(2*b*cos(d*x + c) + 2*I*b*si
n(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) + ((a^2 - b^2
)*d*e - (a^2 - b^2)*c*f)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sq
rt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) + ((a^2 - b^2)*d*e - (a^2 - b^2)
*c*f)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^
2) + 2*I*a)*sin(d*x + c) + ((a^2 - b^2)*d*e - (a^2 - b^2)*c*f)*log(-2*b*cos
(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*
x + c) + ((a^2 - b^2)*d*f*x + (a^2 - b^2)*c*f)*log(1/2*(2*I*a*cos(d*x + c)
+ 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2
)/b^2) + 2*b)/b)*sin(d*x + c) + ((a^2 - b^2)*d*f*x + (a^2 - b^2)*c*f)*log(1
/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + ((a^2 - b^2)*d*f*x +
 (a^2 - b^2)*c*f)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*co
s(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c
) + ((a^2 - b^2)*d*f*x + (a^2 - b^2)*c*f)*log(1/2*(-2*I*a*cos(d*x + c) + 2*
a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^
2) + 2*b)/b)*sin(d*x + c) + (b^2*d*f*x + b^2*d*e + a*b*f)*log(cos(d*x + c)
+ I*sin(d*x + c) + 1)*sin(d*x + c) + (b^2*d*f*x + b^2*d*e + a*b*f)*log(cos(
d*x + c) - I*sin(d*x + c) + 1)*sin(d*x + c) + (b^2*d*e - (b^2*c + a*b)*f)*l
og(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) + (b^2*d*e -
```

```
(b^2*c + a*b)*f)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2)*sin(d*x
+ c) + (b^2*d*f*x + b^2*c*f)*log(-cos(d*x + c) + I*sin(d*x + c) + 1)*sin(d*
x + c) + (b^2*d*f*x + b^2*c*f)*log(-cos(d*x + c) - I*sin(d*x + c) + 1)*sin(
d*x + c))/(a^2*b*d^2*sin(d*x + c))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(fx+e)\cos(dx+c)\cot(dx+c)^2}{b\sin(dx+c)+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="gi
ac")
```

```
[Out] integrate((f*x + e)*cos(d*x + c)*cot(d*x + c)^2/(b*sin(d*x + c) + a), x)
```

maple [B] time = 0.58, size = 1732, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] -I/d^2/b*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-
a^2+b^2)^(1/2)))*a^2-I/d^2/b*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2
+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a^2-I/a^2*b^3/d^2*f/(-a^2+b^2)*dilog((
I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))-I/a^2*b^3/d^
2*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2
)^(1/2)))+1/d^2/b*f*c*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)-2/d^2
/b*f*c*ln(exp(I*(d*x+c)))-1/d/b*e*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c)
)-I*b)+2/d/b*ln(exp(I*(d*x+c)))*e-2*I*(f*x+e)*exp(I*(d*x+c))/d/a/(exp(2*I*(
d*x+c))-1)-1/a^2/d*b*f*ln(exp(I*(d*x+c))+1)*x+1/a^2/d^2*b*f*c*ln(exp(I*(d*x
+c))-1)-I/a^2/d^2*b*f*dilog(exp(I*(d*x+c)))-1/a/d^2*f*ln(exp(I*(d*x+c))+1)+
1/a/d^2*f*ln(exp(I*(d*x+c))-1)+1/d/b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-
(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*a^2*x+1/d^2/b*f/(-a^2+b^2)*ln((I*
a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*a^2*c+1/d/b*f/
(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)
))*a^2*x+1/d^2/b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I
*a+(-a^2+b^2)^(1/2)))*a^2*c-2/d*b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-(-a
^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*x-2/d^2*b*f/(-a^2+b^2)*ln((I*a+b*exp
(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c-2/d*b*f/(-a^2+b^2)*
ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-2/d^2*
b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(
1/2)))*c+1/a^2*b/d*e*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)+I/b/d^
```

```
2*c^2*f-1/a^2/d*b*e*ln(exp(I*(d*x+c))+1)-1/a^2/d*b*e*ln(exp(I*(d*x+c))-1)+1
/2*I/b*f*x^2-I/b*e*x+2*I/b/d*c*f*x+2*I*b/d^2*f/(-a^2+b^2)*dilog((I*a+b*exp(
I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))+2*I*b/d^2*f/(-a^2+b^2)
*dilog((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))+I/a^
2*b/d^2*f*dilog(exp(I*(d*x+c))+1)-1/a^2*b/d^2*f*c*ln(I*b*exp(2*I*(d*x+c))-2
*a*exp(I*(d*x+c))-I*b)+1/a^2*b^3/d^2*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-
(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(1/2)))*c+1/a^2*b^3/d^2*f/(-a^2+b^2)*ln((
I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c+1/a^2*b^3/
d*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))-(-a^2+b^2)^(1/2))/(I*a-(-a^2+b^2)^(
1/2)))*x+1/a^2*b^3/d*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2)
)/(I*a+(-a^2+b^2)^(1/2)))*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="ma
xima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*cot(c + d*x)^2*(e + f*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e + fx)\cos(c + dx)\cot^2(c + dx)}{a + b\sin(c + dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*cos(c + d*x)*cot(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.340 $\int \frac{\cos(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=60

$$-\frac{\left(1-\frac{b^2}{a^2}\right)\log(a+b\sin(c+dx))}{bd}-\frac{b\log(\sin(c+dx))}{a^2d}-\frac{\csc(c+dx)}{ad}$$

```
[Out] -csc(d*x+c)/a/d-b*ln(sin(d*x+c))/a^2/d-(1-b^2/a^2)*ln(a+b*sin(d*x+c))/b/d
```

Rubi [A] time = 0.12, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {2837, 12, 894}

$$-\frac{\left(1-\frac{b^2}{a^2}\right)\log(a+b\sin(c+dx))}{bd}-\frac{b\log(\sin(c+dx))}{a^2d}-\frac{\csc(c+dx)}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[(Cos[c + d*x]*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(Csc[c + d*x]/(a*d)) - (b*Log[Sin[c + d*x]])/(a^2*d) - ((1 - b^2/a^2)*Log[
a + b*Sin[c + d*x]])/(b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\cos(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{b^2(b^2-x^2)}{x^2(a+x)}\,dx, x, b\sin(c+dx)\right)}{b^3d}$$
$$= \frac{\text{Subst}\left(\int \frac{b^2-x^2}{x^2(a+x)}\,dx, x, b\sin(c+dx)\right)}{bd}$$
$$= \frac{\text{Subst}\left(\int \left(\frac{b^2}{ax^2} - \frac{b^2}{a^2x} + \frac{-a^2+b^2}{a^2(a+x)}\right)dx, x, b\sin(c+dx)\right)}{bd}$$
$$= -\frac{\csc(c+dx)}{ad} - \frac{b\log(\sin(c+dx))}{a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)\log(a+b\sin(c+dx))}{bd}$$

Mathematica [A] time = 0.10, size = 54, normalized size = 0.90

$$\frac{\left(b^2-a^2\right)\log(a+b\sin(c+dx)) - ab\csc(c+dx) + b^2(-\log(\sin(c+dx)))}{a^2bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cos[c + d*x]*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (-(a*b*Csc[c + d*x]) - b^2*Log[Sin[c + d*x]] + (-a^2 + b^2)*Log[a + b*Sin[c
 + d*x]])/(a^2*b*d)
```

fricas [A] time = 0.50, size = 69, normalized size = 1.15

$$-\frac{b^2\log\left(\frac{1}{2}\sin(dx+c)\right)\sin(dx+c) + \left(a^2-b^2\right)\log(b\sin(dx+c)+a)\sin(dx+c) + ab}{a^2bd\sin(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] -(b^2*log(1/2*sin(d*x + c))*sin(d*x + c) + (a^2 - b^2)*log(b*sin(d*x + c) +
 a)*sin(d*x + c) + a*b)/(a^2*b*d*sin(d*x + c))
```

giac [A] time = 0.67, size = 72, normalized size = 1.20

$$-\frac{\frac{b\log(|\sin(dx+c)|)}{a^2} + \frac{\left(a^2-b^2\right)\log(|b\sin(dx+c)+a|)}{a^2b} - \frac{b\sin(dx+c)-a}{a^2\sin(dx+c)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -(b*log(abs(sin(d*x + c)))/a^2 + (a^2 - b^2)*log(abs(b*sin(d*x + c) + a))/(
a^2*b) - (b*sin(d*x + c) - a)/(a^2*sin(d*x + c)))/d
```

maple [A] time = 0.15, size = 72, normalized size = 1.20

$$-\frac{\ln\left(a+b\sin\left(dx+c\right)\right)}{bd}+\frac{b\ln\left(a+b\sin\left(dx+c\right)\right)}{d\,a^{2}}-\frac{1}{da\sin\left(dx+c\right)}-\frac{b\ln\left(\sin\left(dx+c\right)\right)}{a^{2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] -ln(a+b*sin(d*x+c))/b/d+1/d/a^2*b*ln(a+b*sin(d*x+c))-1/d/a/sin(d*x+c)-b*ln(
sin(d*x+c))/a^2/d
```

maxima [A] time = 0.77, size = 57, normalized size = 0.95

$$-\frac{\frac{b\log(\sin(dx+c))}{a^{2}}+\frac{\left(a^{2}-b^{2}\right)\log(b\sin(dx+c)+a)}{a^{2}b}+\frac{1}{a\sin(dx+c)}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -(b*log(sin(d*x + c))/a^2 + (a^2 - b^2)*log(b*sin(d*x + c) + a)/(a^2*b) + 1
/(a*sin(d*x + c)))/d
```

mupad [B] time = 4.81, size = 118, normalized size = 1.97

$$\frac{\ln\left(a\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^{2}+2\,b\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+a\right)\left(\frac{b}{a^{2}}-\frac{1}{b}\right)}{d}-\frac{\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{2\,a\,d}-\frac{\cot\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{2\,a\,d}+\frac{\ln\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^{2}+1\right)}{b\,d}-\frac{b\,\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)*cot(c + d*x)^2)/(a + b*sin(c + d*x)),x)
```

```
[Out] (log(a + 2*b*tan(c/2 + (d*x)/2) + a*tan(c/2 + (d*x)/2)^2)*(b/a^2 - 1/b))/d
- tan(c/2 + (d*x)/2)/(2*a*d) - cot(c/2 + (d*x)/2)/(2*a*d) + log(tan(c/2 + (
d*x)/2)^2 + 1)/(b*d) - (b*log(tan(c/2 + (d*x)/2)))/(a^2*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\cos\left(c+dx\right)\cot^{2}\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral(cos(c + d*x)*cot(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.341 $\int \frac{(e+fx)^3 \cos^2(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=1144

$$-\frac{\left(a^2-b^2\right)(e+fx)^4}{4ab^2f}-\frac{(e+fx)^4}{4af}+\frac{2b\tanh^{-1}\left(e^{i(c+dx)}\right)(e+fx)^3}{a^2d}-\frac{b\cos(c+dx)(e+fx)^3}{a^2d}-\frac{\left(a^2-b^2\right)\cos(c+dx)(e+}{a^2bd}$$

```
[Out] -I*(f*x+e)^3/a/d+2*b*(f*x+e)^3*arctanh(exp(I*(d*x+c)))/a^2/d-1/4*(f*x+e)^4/
a/f-3*I*f^2*(f*x+e)*polylog(2,exp(2*I*(d*x+c)))/a/d^3+6*(a^2-b^2)*f^2*(f*x+
e)*cos(d*x+c)/a^2/b/d^3+3*(a^2-b^2)*f*(f*x+e)^2*sin(d*x+c)/a^2/b/d^2-(f*x+e
)^3*cot(d*x+c)/a/d+3/2*f^3*polylog(3,exp(2*I*(d*x+c)))/a/d^4+6*(a^2-b^2)^(3
/2)*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b^2/d^4-6*(a^
2-b^2)^(3/2)*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b^2/
d^4+3*I*b*f*(f*x+e)^2*polylog(2,exp(I*(d*x+c)))/a^2/d^2+6*b*f^2*(f*x+e)*pol
ylog(3,-exp(I*(d*x+c)))/a^2/d^3-6*b*f^2*(f*x+e)*polylog(3,exp(I*(d*x+c)))/a
^2/d^3-6*I*b*f^3*polylog(4,exp(I*(d*x+c)))/a^2/d^4+3*f*(f*x+e)^2*ln(1-exp(2
*I*(d*x+c)))/a/d^2-6*I*(a^2-b^2)^(3/2)*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*x
+c))/(a-(a^2-b^2)^(1/2)))/a^2/b^2/d^3+6*I*(a^2-b^2)^(3/2)*f^2*(f*x+e)*polyl
og(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b^2/d^3+I*(a^2-b^2)^(3/2)*
(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b^2/d-3*(a^2-b^2
)^(3/2)*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b
^2/d^2+3*(a^2-b^2)^(3/2)*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b
^2)^(1/2)))/a^2/b^2/d^2-I*(a^2-b^2)^(3/2)*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))
/(a-(a^2-b^2)^(1/2)))/a^2/b^2/d-1/4*(a^2-b^2)*(f*x+e)^4/a/b^2/f+6*I*b*f^3*p
olylog(4,-exp(I*(d*x+c)))/a^2/d^4-3*I*b*f*(f*x+e)^2*polylog(2,-exp(I*(d*x+c
)))/a^2/d^2+6*b*f^2*(f*x+e)*cos(d*x+c)/a^2/d^3-(a^2-b^2)*(f*x+e)^3*cos(d*x+
c)/a^2/b/d-6*(a^2-b^2)*f^3*sin(d*x+c)/a^2/b/d^4+3*b*f*(f*x+e)^2*sin(d*x+c)/
a^2/d^2-b*(f*x+e)^3*cos(d*x+c)/a^2/d-6*b*f^3*sin(d*x+c)/a^2/d^4
```

Rubi [A] time = 2.66, antiderivative size = 1144, normalized size of antiderivative = 1.00, number of steps used = 66, number of rules used = 20, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556, Rules used = {4543, 4408, 3311, 32, 3310, 3720, 3717, 2190, 2531, 2282, 6589, 4405, 3296, 2637, 2633, 4183, 6609, 4525, 3323, 2264}

$$-\frac{\left(a^2-b^2\right)(e+fx)^4}{4ab^2f}-\frac{(e+fx)^4}{4af}+\frac{2b\tanh^{-1}\left(e^{i(c+dx)}\right)(e+fx)^3}{a^2d}-\frac{b\cos(c+dx)(e+fx)^3}{a^2d}-\frac{\left(a^2-b^2\right)\cos(c+dx)(e+}{a^2bd}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x]^2*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I)*(e + f*x)^3)/(a*d) - (e + f*x)^4/(4*a*f) - ((a^2 - b^2)*(e + f*x)^4)/
(4*a*b^2*f) + (2*b*(e + f*x)^3*ArcTanh[E^(I*(c + d*x))])/(a^2*d) + (6*b*f^2
```

```
*(e + f*x)*Cos[c + d*x])/(a^2*d^3) + (6*(a^2 - b^2)*f^2*(e + f*x)*Cos[c + d
*x])/(a^2*b*d^3) - (b*(e + f*x)^3*Cos[c + d*x])/(a^2*d) - ((a^2 - b^2)*(e +
 f*x)^3*Cos[c + d*x])/(a^2*b*d) - ((e + f*x)^3*Cot[c + d*x])/(a*d) - (I*(a^
2 - b^2)^(3/2)*(e + f*x)^3*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^
2])])/(a^2*b^2*d) + (I*(a^2 - b^2)^(3/2)*(e + f*x)^3*Log[1 - (I*b*E^(I*(c +
 d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b^2*d) + (3*f*(e + f*x)^2*Log[1 - E^((
2*I)*(c + d*x))])/(a*d^2) - ((3*I)*b*f*(e + f*x)^2*PolyLog[2, -E^(I*(c + d*
x))])/(a^2*d^2) + ((3*I)*b*f*(e + f*x)^2*PolyLog[2, E^(I*(c + d*x))])/(a^2*
d^2) - (3*(a^2 - b^2)^(3/2)*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/
(a - Sqrt[a^2 - b^2])])/(a^2*b^2*d^2) + (3*(a^2 - b^2)^(3/2)*f*(e + f*x)^2*
PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b^2*d^2) - ((
3*I)*f^2*(e + f*x)*PolyLog[2, E^((2*I)*(c + d*x))])/(a*d^3) + (6*b*f^2*(e +
 f*x)*PolyLog[3, -E^(I*(c + d*x))])/(a^2*d^3) - (6*b*f^2*(e + f*x)*PolyLog[
3, E^(I*(c + d*x))])/(a^2*d^3) - ((6*I)*(a^2 - b^2)^(3/2)*f^2*(e + f*x)*Pol
yLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^2*d^3) + ((6*I
)*(a^2 - b^2)^(3/2)*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqr
t[a^2 - b^2])])/(a^2*b^2*d^3) + (3*f^3*PolyLog[3, E^((2*I)*(c + d*x))])/(2*
a*d^4) + ((6*I)*b*f^3*PolyLog[4, -E^(I*(c + d*x))])/(a^2*d^4) - ((6*I)*b*f^
3*PolyLog[4, E^(I*(c + d*x))])/(a^2*d^4) + (6*(a^2 - b^2)^(3/2)*f^3*PolyLog
[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^2*d^4) - (6*(a^2 -
 b^2)^(3/2)*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a
^2*b^2*d^4) - (6*b*f^3*Sin[c + d*x])/(a^2*d^4) - (6*(a^2 - b^2)*f^3*Sin[c +
 d*x])/(a^2*b*d^4) + (3*b*f*(e + f*x)^2*Sin[c + d*x])/(a^2*d^2) + (3*(a^2 -
 b^2)*f*(e + f*x)^2*Sin[c + d*x])/(a^2*b*d^2)
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
```

```
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4405

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)], x_Symbol] :> -Simp[((c + d*x)^m*Cos[a + b*x]^(n + 1))/(b*(n + 1)
), x] + Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cos[a + b*x]^(n + 1),
 x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos^2(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\cos^2(c+dx)\cot^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cos^3(c+dx)\cot(c+d}{a+b\sin(c+dx)}}{a}$$

$$= -\frac{\int (e+fx)^3\cos^2(c+dx)\,dx}{a} + \frac{\int (e+fx)^3\cot^2(c+dx)\,dx}{a} - \frac{b\int (e}{}$$

$$= -\frac{3f(e+fx)^2\cos^2(c+dx)}{4ad^2} - \frac{(e+fx)^3\cot(c+dx)}{ad} - \frac{(e+fx)^3\cos(}{}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{3(e+fx)^4}{8af} + \frac{3f^3\cos^2(c+dx)}{8ad^4} - \frac{(e+fx)^3\cot(c+dx}{ad}$$

$$= \frac{3ef^2x}{4ad^2} + \frac{3f^3x^2}{8ad^2} - \frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4b^2f} + \frac{2}{}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4b^2f} + \frac{2b(e+fx)^3\tanh^{-}}{a^2d}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4b^2f} + \frac{2b(e+fx)^3\tanh^{-}}{a^2d}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4b^2f} + \frac{2b(e+fx)^3\tanh^{-}}{a^2d}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4b^2f} + \frac{2b(e+fx)^3\tanh^{-}}{a^2d}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4b^2f} + \frac{2b(e+fx)^3\tanh^{-}}{a^2d}$$

$$= -\frac{i(e+fx)^3}{ad} - \frac{(e+fx)^4}{4af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^4}{4b^2f} + \frac{2b(e+fx)^3\tanh^{-}}{a^2d}$$

Mathematica [B] time = 45.92, size = 3860, normalized size = 3.37

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x]^2*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),
x]
```

```
[Out] (((-2*I)*a*d^3*(e + f*x)^3)/(-1 + E^((2*I)*c)) - 3*d^2*e*f*(b*d*e - 2*a*f)*
x*Log[1 - E^((-I)*(c + d*x))] - 3*d^2*f^2*(b*d*e - a*f)*x^2*Log[1 - E^((-I)
*(c + d*x))] - b*d^3*f^3*x^3*Log[1 - E^((-I)*(c + d*x))] + 3*d^2*e*f*(b*d*e
 + 2*a*f)*x*Log[1 + E^((-I)*(c + d*x))] + 3*d^2*f^2*(b*d*e + a*f)*x^2*Log[1
 + E^((-I)*(c + d*x))] + b*d^3*f^3*x^3*Log[1 + E^((-I)*(c + d*x))] + I*d^2*
e^2*(b*d*e - 3*a*f)*(d*x + I*Log[1 - E^(I*(c + d*x))]) + d^2*e^2*(b*d*e + 3
*a*f)*((-I)*d*x + Log[1 + E^(I*(c + d*x))]) + (3*I)*d*e*f*(b*d*e + 2*a*f)*P
olyLog[2, -E^((-I)*(c + d*x))] - (3*I)*d*e*f*(b*d*e - 2*a*f)*PolyLog[2, E^(
(-I)*(c + d*x))] + 6*f^2*(b*d*e + a*f)*(I*d*x*PolyLog[2, -E^((-I)*(c + d*x)
)] + PolyLog[3, -E^((-I)*(c + d*x))]) + 6*f^2*(-(b*d*e) + a*f)*(I*d*x*PolyL
og[2, E^((-I)*(c + d*x))] + PolyLog[3, E^((-I)*(c + d*x))]) + 3*b*f^3*(I*d^
2*x^2*PolyLog[2, -E^((-I)*(c + d*x))] + 2*d*x*PolyLog[3, -E^((-I)*(c + d*x)
)] - (2*I)*PolyLog[4, -E^((-I)*(c + d*x))]) - (3*I)*b*f^3*(d^2*x^2*PolyLog[
2, E^((-I)*(c + d*x))] - (2*I)*d*x*PolyLog[3, E^((-I)*(c + d*x))] - 2*PolyL
og[4, E^((-I)*(c + d*x))]))/(a^2*d^4) + (Sqrt[-(a^2 - b^2)^2]*(-2*Sqrt[-a^2
 + b^2]*d^3*e^3*ArcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] - 3*Sqrt[
a^2 - b^2]*d^3*e^2*f*x*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^
2])] - 3*Sqrt[a^2 - b^2]*d^3*e*f^2*x^2*Log[1 - (b*E^(I*(c + d*x)))/((-I)*a
+ Sqrt[-a^2 + b^2])] - Sqrt[a^2 - b^2]*d^3*f^3*x^3*Log[1 - (b*E^(I*(c + d*x
)))/((-I)*a + Sqrt[-a^2 + b^2])] + 3*Sqrt[a^2 - b^2]*d^3*e^2*f*x*Log[1 + (b
*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] + 3*Sqrt[a^2 - b^2]*d^3*e*f^2*x
^2*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] + Sqrt[a^2 - b^2]*
d^3*f^3*x^3*Log[1 + (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])] + (3*I)*S
qrt[a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a + S
qrt[-a^2 + b^2])] - (3*I)*Sqrt[a^2 - b^2]*d^2*f*(e + f*x)^2*PolyLog[2, -((b
*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] - 6*Sqrt[a^2 - b^2]*d*e*f^2*Po
lyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 6*Sqrt[a^2 - b^
2]*d*f^3*x*PolyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + 6*
Sqrt[a^2 - b^2]*d*e*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 +
 b^2]))] + 6*Sqrt[a^2 - b^2]*d*f^3*x*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a
+ Sqrt[-a^2 + b^2]))] - (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, (b*E^(I*(c + d
*x)))/((-I)*a + Sqrt[-a^2 + b^2])] + (6*I)*Sqrt[a^2 - b^2]*f^3*PolyLog[4, -
((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))]))/(a^2*b^2*d^4) + Csc[c]*Cs
c[c + d*x]*(Cos[c + d*x]/(16*a*b^2*d^4) - ((I/16)*Sin[c + d*x])/(a*b^2*d^4)
)*((8*I)*b^2*d^3*e^3*Cos[c] + (24*I)*b^2*d^3*e^2*f*x*Cos[c] + (24*I)*b^2*d^
3*e*f^2*x^2*Cos[c] + (8*I)*b^2*d^3*f^3*x^3*Cos[c] - 2*a*b*d^3*e^3*Cos[d*x]
+ (18*I)*a*b*d^2*e^2*f*Cos[d*x] + 12*a*b*d*e*f^2*Cos[d*x] - (36*I)*a*b*f^3*
Cos[d*x] - 6*a*b*d^3*e^2*f*x*Cos[d*x] + (36*I)*a*b*d^2*e*f^2*x*Cos[d*x] + 1
2*a*b*d*f^3*x*Cos[d*x] - 6*a*b*d^3*e*f^2*x^2*Cos[d*x] + (18*I)*a*b*d^2*f^3*
x^2*Cos[d*x] - 2*a*b*d^3*f^3*x^3*Cos[d*x] + 2*a*b*d^3*e^3*Cos[2*c + d*x] -
(18*I)*a*b*d^2*e^2*f*Cos[2*c + d*x] - 12*a*b*d*e*f^2*Cos[2*c + d*x] + (36*I
)*a*b*f^3*Cos[2*c + d*x] + 6*a*b*d^3*e^2*f*x*Cos[2*c + d*x] - (36*I)*a*b*d^
2*e*f^2*x*Cos[2*c + d*x] - 12*a*b*d*f^3*x*Cos[2*c + d*x] + 6*a*b*d^3*e*f^2*
x^2*Cos[2*c + d*x] - (18*I)*a*b*d^2*f^3*x^2*Cos[2*c + d*x] + 2*a*b*d^3*f^3*
x^3*Cos[2*c + d*x] - (8*I)*b^2*d^3*e^3*Cos[c + 2*d*x] - 4*a^2*d^4*e^3*x*Cos
```

[c + 2*d*x] - (24*I)*b^2*d^3*e^2*f*x*Cos[c + 2*d*x] - 6*a^2*d^4*e^2*f*x^2*C
os[c + 2*d*x] - (24*I)*b^2*d^3*e*f^2*x^2*Cos[c + 2*d*x] - 4*a^2*d^4*e*f^2*x
^3*Cos[c + 2*d*x] - (8*I)*b^2*d^3*f^3*x^3*Cos[c + 2*d*x] - a^2*d^4*f^3*x^4*
Cos[c + 2*d*x] + 4*a^2*d^4*e^3*x*Cos[3*c + 2*d*x] + 6*a^2*d^4*e^2*f*x^2*Cos
[3*c + 2*d*x] + 4*a^2*d^4*e*f^2*x^3*Cos[3*c + 2*d*x] + a^2*d^4*f^3*x^4*Cos[
3*c + 2*d*x] - 2*a*b*d^3*e^3*Cos[2*c + 3*d*x] - (6*I)*a*b*d^2*e^2*f*Cos[2*c
 + 3*d*x] + 12*a*b*d*e*f^2*Cos[2*c + 3*d*x] + (12*I)*a*b*f^3*Cos[2*c + 3*d*
x] - 6*a*b*d^3*e^2*f*x*Cos[2*c + 3*d*x] - (12*I)*a*b*d^2*e*f^2*x*Cos[2*c +
3*d*x] + 12*a*b*d*f^3*x*Cos[2*c + 3*d*x] - 6*a*b*d^3*e*f^2*x^2*Cos[2*c + 3*
d*x] - (6*I)*a*b*d^2*f^3*x^2*Cos[2*c + 3*d*x] - 2*a*b*d^3*f^3*x^3*Cos[2*c +
 3*d*x] + 2*a*b*d^3*e^3*Cos[4*c + 3*d*x] + (6*I)*a*b*d^2*e^2*f*Cos[4*c + 3*
d*x] - 12*a*b*d*e*f^2*Cos[4*c + 3*d*x] - (12*I)*a*b*f^3*Cos[4*c + 3*d*x] +
6*a*b*d^3*e^2*f*x*Cos[4*c + 3*d*x] + (12*I)*a*b*d^2*e*f^2*x*Cos[4*c + 3*d*x
] - 12*a*b*d*f^3*x*Cos[4*c + 3*d*x] + 6*a*b*d^3*e*f^2*x^2*Cos[4*c + 3*d*x]
+ (6*I)*a*b*d^2*f^3*x^2*Cos[4*c + 3*d*x] + 2*a*b*d^3*f^3*x^3*Cos[4*c + 3*d*
x] - 8*b^2*d^3*e^3*Sin[c] - (8*I)*a^2*d^4*e^3*x*Sin[c] - 24*b^2*d^3*e^2*f*x
*Sin[c] - (12*I)*a^2*d^4*e^2*f*x^2*Sin[c] - 24*b^2*d^3*e*f^2*x^2*Sin[c] - (
8*I)*a^2*d^4*e*f^2*x^3*Sin[c] - 8*b^2*d^3*f^3*x^3*Sin[c] - (2*I)*a^2*d^4*f^
3*x^4*Sin[c] + (2*I)*a*b*d^3*e^3*Sin[d*x] - 6*a*b*d^2*e^2*f*Sin[d*x] - (12*
I)*a*b*d*e*f^2*Sin[d*x] + 12*a*b*f^3*Sin[d*x] + (6*I)*a*b*d^3*e^2*f*x*Sin[d
*x] - 12*a*b*d^2*e*f^2*x*Sin[d*x] - (12*I)*a*b*d*f^3*x*Sin[d*x] + (6*I)*a*b
*d^3*e*f^2*x^2*Sin[d*x] - 6*a*b*d^2*f^3*x^2*Sin[d*x] + (2*I)*a*b*d^3*f^3*x^
3*Sin[d*x] - (2*I)*a*b*d^3*e^3*Sin[2*c + d*x] + 6*a*b*d^2*e^2*f*Sin[2*c + d
*x] + (12*I)*a*b*d*e*f^2*Sin[2*c + d*x] - 12*a*b*f^3*Sin[2*c + d*x] - (6*I)
*a*b*d^3*e^2*f*x*Sin[2*c + d*x] + 12*a*b*d^2*e*f^2*x*Sin[2*c + d*x] + (12*I
)*a*b*d*f^3*x*Sin[2*c + d*x] - (6*I)*a*b*d^3*e*f^2*x^2*Sin[2*c + d*x] + 6*a
*b*d^2*f^3*x^2*Sin[2*c + d*x] - (2*I)*a*b*d^3*f^3*x^3*Sin[2*c + d*x] + 8*b^
2*d^3*e^3*Sin[c + 2*d*x] - (4*I)*a^2*d^4*e^3*x*Sin[c + 2*d*x] + 24*b^2*d^3*
e^2*f*x*Sin[c + 2*d*x] - (6*I)*a^2*d^4*e^2*f*x^2*Sin[c + 2*d*x] + 24*b^2*d^
3*e*f^2*x^2*Sin[c + 2*d*x] - (4*I)*a^2*d^4*e*f^2*x^3*Sin[c + 2*d*x] + 8*b^2
*d^3*f^3*x^3*Sin[c + 2*d*x] - I*a^2*d^4*f^3*x^4*Sin[c + 2*d*x] + (4*I)*a^2*
d^4*e^3*x*Sin[3*c + 2*d*x] + (6*I)*a^2*d^4*e^2*f*x^2*Sin[3*c + 2*d*x] + (4*
I)*a^2*d^4*e*f^2*x^3*Sin[3*c + 2*d*x] + I*a^2*d^4*f^3*x^4*Sin[3*c + 2*d*x]
- (2*I)*a*b*d^3*e^3*Sin[2*c + 3*d*x] + 6*a*b*d^2*e^2*f*Sin[2*c + 3*d*x] + (
12*I)*a*b*d*e*f^2*Sin[2*c + 3*d*x] - 12*a*b*f^3*Sin[2*c + 3*d*x] - (6*I)*a*
b*d^3*e^2*f*x*Sin[2*c + 3*d*x] + 12*a*b*d^2*e*f^2*x*Sin[2*c + 3*d*x] + (12*
I)*a*b*d*f^3*x*Sin[2*c + 3*d*x] - (6*I)*a*b*d^3*e*f^2*x^2*Sin[2*c + 3*d*x]
+ 6*a*b*d^2*f^3*x^2*Sin[2*c + 3*d*x] - (2*I)*a*b*d^3*f^3*x^3*Sin[2*c + 3*d*
x] + (2*I)*a*b*d^3*e^3*Sin[4*c + 3*d*x] - 6*a*b*d^2*e^2*f*Sin[4*c + 3*d*x]
- (12*I)*a*b*d*e*f^2*Sin[4*c + 3*d*x] + 12*a*b*f^3*Sin[4*c + 3*d*x] + (6*I)
*a*b*d^3*e^2*f*x*Sin[4*c + 3*d*x] - 12*a*b*d^2*e*f^2*x*Sin[4*c + 3*d*x] - (
12*I)*a*b*d*f^3*x*Sin[4*c + 3*d*x] + (6*I)*a*b*d^3*e*f^2*x^2*Sin[4*c + 3*d*
x] - 6*a*b*d^2*f^3*x^2*Sin[4*c + 3*d*x] + (2*I)*a*b*d^3*f^3*x^3*Sin[4*c + 3
*d*x])

fricas [C] time = 1.24, size = 4722, normalized size = 4.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/4*(12*a^2*b*d^2*f^3*x^2 + 24*a^2*b*d^2*e*f^2*x + 12*a^2*b*d^2*e^2*f - 12*
I*b^3*f^3*polylog(4, cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 12*I*b^3
*f^3*polylog(4, cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 12*I*b^3*f^3*
polylog(4, -cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 12*I*b^3*f^3*poly
log(4, -cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 12*I*(a^2*b - b^3)*f^
3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x +
 c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(
d*x + c) + 12*I*(a^2*b - b^3)*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(2*
I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 12*I*(a^2*b - b^3)*f^3*sqrt(-(a^
2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b
*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) -
 12*I*(a^2*b - b^3)*f^3*sqrt(-(a^2 - b^2)/b^2)*polylog(4, 1/2*(-2*I*a*cos(d
*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a
^2 - b^2)/b^2))/b)*sin(d*x + c) - 24*a^2*b*f^3 + 2*(3*I*(a^2*b - b^3)*d^2*f
^3*x^2 + 6*I*(a^2*b - b^3)*d^2*e*f^2*x + 3*I*(a^2*b - b^3)*d^2*e^2*f)*sqrt(
-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*
cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d
*x + c) + 2*(-3*I*(a^2*b - b^3)*d^2*f^3*x^2 - 6*I*(a^2*b - b^3)*d^2*e*f^2*x
 - 3*I*(a^2*b - b^3)*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*co
s(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*(-3*I*(a^2*b - b^3)*d^2*f^
3*x^2 - 6*I*(a^2*b - b^3)*d^2*e*f^2*x - 3*I*(a^2*b - b^3)*d^2*e^2*f)*sqrt(-
(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*
cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d
*x + c) + 2*(3*I*(a^2*b - b^3)*d^2*f^3*x^2 + 6*I*(a^2*b - b^3)*d^2*e*f^2*x
+ 3*I*(a^2*b - b^3)*d^2*e^2*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*co
s(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*((a^2*b - b^3)*d^3*e^3 - 3
*(a^2*b - b^3)*c*d^2*e^2*f + 3*(a^2*b - b^3)*c^2*d*e*f^2 - (a^2*b - b^3)*c^
3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2
*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) + 2*((a^2*b - b^3)*d^3*e^3
- 3*(a^2*b - b^3)*c*d^2*e^2*f + 3*(a^2*b - b^3)*c^2*d*e*f^2 - (a^2*b - b^3)
*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c)
+ 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) - 2*((a^2*b - b^3)*d^3*e
^3 - 3*(a^2*b - b^3)*c*d^2*e^2*f + 3*(a^2*b - b^3)*c^2*d*e*f^2 - (a^2*b - b
```

^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) - 2*((a^2*b - b^3)*d^3*e^3 - 3*(a^2*b - b^3)*c*d^2*e^2*f + 3*(a^2*b - b^3)*c^2*d*e*f^2 - (a^2*b - b^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) + 2*((a^2*b - b^3)*d^3*f^3*x^3 + 3*(a^2*b - b^3)*d^3*e*f^2*x^2 + 3*(a^2*b - b^3)*d^3*e^2*f*x + 3*(a^2*b - b^3)*c*d^2*e^2*f - 3*(a^2*b - b^3)*c^2*d*e*f^2 + (a^2*b - b^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 2*((a^2*b - b^3)*d^3*f^3*x^3 + 3*(a^2*b - b^3)*d^3*e*f^2*x^2 + 3*(a^2*b - b^3)*d^3*e^2*f*x + 3*(a^2*b - b^3)*c*d^2*e^2*f - 3*(a^2*b - b^3)*c^2*d*e*f^2 + (a^2*b - b^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + 2*((a^2*b - b^3)*d^3*f^3*x^3 + 3*(a^2*b - b^3)*d^3*e*f^2*x^2 + 3*(a^2*b - b^3)*d^3*e^2*f*x + 3*(a^2*b - b^3)*c*d^2*e^2*f - 3*(a^2*b - b^3)*c^2*d*e*f^2 + (a^2*b - b^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 2*((a^2*b - b^3)*d^3*f^3*x^3 + 3*(a^2*b - b^3)*d^3*e*f^2*x^2 + 3*(a^2*b - b^3)*d^3*e^2*f*x + 3*(a^2*b - b^3)*c*d^2*e^2*f - 3*(a^2*b - b^3)*c^2*d*e*f^2 + (a^2*b - b^3)*c^3*f^3)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 12*((a^2*b - b^3)*d*f^3*x + (a^2*b - b^3)*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 12*((a^2*b - b^3)*d*f^3*x + (a^2*b - b^3)*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - 12*((a^2*b - b^3)*d*f^3*x + (a^2*b - b^3)*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 12*((a^2*b - b^3)*d*f^3*x + (a^2*b - b^3)*d*e*f^2)*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - 12*(a^2*b*d^2*f^3*x^2 + 2*a^2*b*d^2*e*f^2*x + a^2*b*d^2*e^2*f - 2*a^2*b*f^3)*cos(d*x + c)^2 + (6*I*b^3*d^2*f^3*x^2 + 6*I*b^3*d^2*e^2*f - 12*I*a*b^2*d*e*f^2 + 12*I*(b^3*d^2*e*f^2 - a*b^2*d*f^3)*x)*dilog(cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + (-6*I*b^3*d^2*f^3*x^2 - 6*I*b^3*d^2*e^2*f + 12*I*a*b^2*d*e*f^2 - 12*I*(b^3*d^2*e*f^2 - a*b^2*d*f^3)*x)*dilog(cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + (6*I*b^3*d^2*f^3*x^2 + 6*I*b^3*d^2*e^2*f + 12*I*a*b^2*d*e*f^2 + 12*I*(b^3*d^2*e*f^2 + a*b^2*d*f^3)*x)*dilog(-cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + (-6*I*b^3*d^2*f^3*x^2 - 6*I*b^3*d^2*e^2*f - 12*I*a*b^2*d*e*f^2 - 12*I*(b^3*d^2*e*f^2 + a*b^2*d*f^3)*x)*dilog(-cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + 2*(b^3*d^3*f^3*x^3 + b^3*d^3*e^3 + 3*a*b^2*d^2*e^2*f + 3*(b^3*d^3*e*f^2 + a*b^2*d^2*f^3)*x^2 + 3*(b^3*d^3*e^2*f + 2*a*b^

```
2*d^2*e*f^2)*x)*log(cos(d*x + c) + I*sin(d*x + c) + 1)*sin(d*x + c) + 2*(b^
3*d^3*f^3*x^3 + b^3*d^3*e^3 + 3*a*b^2*d^2*e^2*f + 3*(b^3*d^3*e*f^2 + a*b^2*
d^2*f^3)*x^2 + 3*(b^3*d^3*e^2*f + 2*a*b^2*d^2*e*f^2)*x)*log(cos(d*x + c) -
I*sin(d*x + c) + 1)*sin(d*x + c) - 2*(b^3*d^3*e^3 - 3*(b^3*c + a*b^2)*d^2*e
^2*f + 3*(b^3*c^2 + 2*a*b^2*c)*d*e*f^2 - (b^3*c^3 + 3*a*b^2*c^2)*f^3)*log(-
1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) - 2*(b^3*d^3*e^3
- 3*(b^3*c + a*b^2)*d^2*e^2*f + 3*(b^3*c^2 + 2*a*b^2*c)*d*e*f^2 - (b^3*c^3
+ 3*a*b^2*c^2)*f^3)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2)*sin(d
*x + c) - 2*(b^3*d^3*f^3*x^3 + 3*b^3*c*d^2*e^2*f - 3*(b^3*c^2 + 2*a*b^2*c)*
d*e*f^2 + (b^3*c^3 + 3*a*b^2*c^2)*f^3 + 3*(b^3*d^3*e*f^2 - a*b^2*d^2*f^3)*x
^2 + 3*(b^3*d^3*e^2*f - 2*a*b^2*d^2*e*f^2)*x)*log(-cos(d*x + c) + I*sin(d*x
 + c) + 1)*sin(d*x + c) - 2*(b^3*d^3*f^3*x^3 + 3*b^3*c*d^2*e^2*f - 3*(b^3*c
^2 + 2*a*b^2*c)*d*e*f^2 + (b^3*c^3 + 3*a*b^2*c^2)*f^3 + 3*(b^3*d^3*e*f^2 -
a*b^2*d^2*f^3)*x^2 + 3*(b^3*d^3*e^2*f - 2*a*b^2*d^2*e*f^2)*x)*log(-cos(d*x
+ c) - I*sin(d*x + c) + 1)*sin(d*x + c) - 12*(b^3*d*f^3*x + b^3*d*e*f^2 - a
*b^2*f^3)*polylog(3, cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) - 12*(b^3*
d*f^3*x + b^3*d*e*f^2 - a*b^2*f^3)*polylog(3, cos(d*x + c) - I*sin(d*x + c)
)*sin(d*x + c) + 12*(b^3*d*f^3*x + b^3*d*e*f^2 + a*b^2*f^3)*polylog(3, -cos
(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 12*(b^3*d*f^3*x + b^3*d*e*f^2 +
a*b^2*f^3)*polylog(3, -cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 4*(a*b
^2*d^3*f^3*x^3 + 3*a*b^2*d^3*e*f^2*x^2 + 3*a*b^2*d^3*e^2*f*x + a*b^2*d^3*e^
3)*cos(d*x + c) - (a^3*d^4*f^3*x^4 + 4*a^3*d^4*e*f^2*x^3 + 6*a^3*d^4*e^2*f*
x^2 + 4*a^3*d^4*e^3*x + 4*(a^2*b*d^3*f^3*x^3 + 3*a^2*b*d^3*e*f^2*x^2 + a^2*
b*d^3*e^3 - 6*a^2*b*d*e*f^2 + 3*(a^2*b*d^3*e^2*f - 2*a^2*b*d*f^3)*x)*cos(d*
x + c))*sin(d*x + c))/(a^2*b^2*d^4*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

maple [F] time = 8.14, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\cos^{2}\left(dx+c\right)\right) \left(\cot^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*cot(c + d*x)^2*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^{3} \cos^{2}\left(c + dx\right) \cot^{2}\left(c + dx\right)}{a + b \sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)**2*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**3*cos(c + d*x)**2*cot(c + d*x)**2/(a + b*sin(c + d*x)),
 x)
```

3.342 $\int \frac{(e+fx)^2\cos^2(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=840

$$-\frac{\left(a^2-b^2\right)(e+fx)^3}{3ab^2f}-\frac{(e+fx)^3}{3af}+\frac{2b\tanh^{-1}\left(e^{i(c+dx)}\right)(e+fx)^2}{a^2d}-\frac{b\cos(c+dx)(e+fx)^2}{a^2d}-\frac{\left(a^2-b^2\right)\cos(c+dx)(e+}{a^2bd}$$

```
[Out] -2*I*(a^2-b^2)^(3/2)*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/
a^2/b^2/d^3-1/3*(f*x+e)^3/a/f-1/3*(a^2-b^2)*(f*x+e)^3/a/b^2/f+2*b*(f*x+e)^2
*arctanh(exp(I*(d*x+c)))/a^2/d+2*b*f^2*cos(d*x+c)/a^2/d^3+2*(a^2-b^2)*f^2*c
os(d*x+c)/a^2/b/d^3-b*(f*x+e)^2*cos(d*x+c)/a^2/d-(a^2-b^2)*(f*x+e)^2*cos(d*
x+c)/a^2/b/d-(f*x+e)^2*cot(d*x+c)/a/d+2*f*(f*x+e)*ln(1-exp(2*I*(d*x+c)))/a/
d^2-I*(f*x+e)^2/a/d-I*(a^2-b^2)^(3/2)*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-
(a^2-b^2)^(1/2)))/a^2/b^2/d+2*I*(a^2-b^2)^(3/2)*f^2*polylog(3,I*b*exp(I*(d*
x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b^2/d^3-I*f^2*polylog(2,exp(2*I*(d*x+c)))/a/
d^3-2*I*b*f*(f*x+e)*polylog(2,-exp(I*(d*x+c)))/a^2/d^2-2*(a^2-b^2)^(3/2)*f*
(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b^2/d^2+2*(a^
2-b^2)^(3/2)*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^
2/b^2/d^2+2*b*f^2*polylog(3,-exp(I*(d*x+c)))/a^2/d^3-2*b*f^2*polylog(3,exp(
I*(d*x+c)))/a^2/d^3+I*(a^2-b^2)^(3/2)*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+
(a^2-b^2)^(1/2)))/a^2/b^2/d+2*I*b*f*(f*x+e)*polylog(2,exp(I*(d*x+c)))/a^2/d
^2+2*b*f*(f*x+e)*sin(d*x+c)/a^2/d^2+2*(a^2-b^2)*f*(f*x+e)*sin(d*x+c)/a^2/b/
d^2
```

Rubi [A] time = 2.15, antiderivative size = 840, normalized size of antiderivative = 1.00, number of steps used = 53, number of rules used = 22, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.611, Rules used = {4543, 4408, 3311, 32, 2635, 8, 3720, 3717, 2190, 2279, 2391, 4405, 3310, 3296, 2638, 4183, 2531, 2282, 6589, 4525, 3323, 2264}

$$-\frac{\left(a^2-b^2\right)(e+fx)^3}{3ab^2f}-\frac{(e+fx)^3}{3af}+\frac{2b\tanh^{-1}\left(e^{i(c+dx)}\right)(e+fx)^2}{a^2d}-\frac{b\cos(c+dx)(e+fx)^2}{a^2d}-\frac{\left(a^2-b^2\right)\cos(c+dx)(e+}{a^2bd}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x]^2*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-I)*(e + f*x)^2)/(a*d) - (e + f*x)^3/(3*a*f) - ((a^2 - b^2)*(e + f*x)^3)/
(3*a*b^2*f) + (2*b*(e + f*x)^2*ArcTanh[E^(I*(c + d*x))])/(a^2*d) + (2*b*f^2
*Cos[c + d*x])/(a^2*d^3) + (2*(a^2 - b^2)*f^2*Cos[c + d*x])/(a^2*b*d^3) - (
b*(e + f*x)^2*Cos[c + d*x])/(a^2*d) - ((a^2 - b^2)*(e + f*x)^2*Cos[c + d*x]
)/(a^2*b*d) - ((e + f*x)^2*Cot[c + d*x])/(a*d) - (I*(a^2 - b^2)^(3/2)*(e +
f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^2*d) +
```

```
(I*(a^2 - b^2)^(3/2)*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^
2 - b^2])])/(a^2*b^2*d) + (2*f*(e + f*x)*Log[1 - E^((2*I)*(c + d*x))])/(a*d
^2) - ((2*I)*b*f*(e + f*x)*PolyLog[2, -E^(I*(c + d*x))])/(a^2*d^2) + ((2*I)
*b*f*(e + f*x)*PolyLog[2, E^(I*(c + d*x))])/(a^2*d^2) - (2*(a^2 - b^2)^(3/2
)*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2
*b^2*d^2) + (2*(a^2 - b^2)^(3/2)*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)
))/(a + Sqrt[a^2 - b^2])])/(a^2*b^2*d^2) - (I*f^2*PolyLog[2, E^((2*I)*(c +
d*x))])/(a*d^3) + (2*b*f^2*PolyLog[3, -E^(I*(c + d*x))])/(a^2*d^3) - (2*b*f
^2*PolyLog[3, E^(I*(c + d*x))])/(a^2*d^3) - ((2*I)*(a^2 - b^2)^(3/2)*f^2*Po
lyLog[3, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^2*d^3) + ((2*
I)*(a^2 - b^2)^(3/2)*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b
^2])])/(a^2*b^2*d^3) + (2*b*f*(e + f*x)*Sin[c + d*x])/(a^2*d^2) + (2*(a^2 -
 b^2)*f*(e + f*x)*Sin[c + d*x])/(a^2*b*d^2)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
```

```
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4405

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)], x_Symbol] :> -Simp[((c + d*x)^m*Cos[a + b*x]^(n + 1))/(b*(n + 1)
```

```
), x] + Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cos[a + b*x]^(n + 1),
 x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos^2(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\cos^2(c+dx)\cot^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cos^3(c+dx)\cot(c+d}{a+b\sin(c+dx)}}{a}$$

$$= -\frac{\int (e+fx)^2\cos^2(c+dx)\,dx}{a} + \frac{\int (e+fx)^2\cot^2(c+dx)\,dx}{a} - \frac{b\int(e}{}$$

$$= -\frac{f(e+fx)\cos^2(c+dx)}{2ad^2} - \frac{(e+fx)^2\cot(c+dx)}{ad} - \frac{(e+fx)^2\cos(c}{2a}$$

$$= -\frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{2af} - \frac{(e+fx)^2\cot(c+dx)}{ad} + \frac{f^2\cos(c+dx)\sin}{4ad^3}$$

$$= \frac{f^2x}{4ad^2} - \frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{3af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3b^2f} + \frac{2b(e+fx)^2}{}$$

$$= -\frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{3af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3b^2f} + \frac{2b(e+fx)^2\tanh^-}{a^2d}$$

$$= -\frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{3af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3b^2f} + \frac{2b(e+fx)^2\tanh^-}{a^2d}$$

$$= -\frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{3af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3b^2f} + \frac{2b(e+fx)^2\tanh^-}{a^2d}$$

$$= -\frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{3af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3b^2f} + \frac{2b(e+fx)^2\tanh^-}{a^2d}$$

$$= -\frac{i(e+fx)^2}{ad} - \frac{(e+fx)^3}{3af} - \frac{a\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{3b^2f} + \frac{2b(e+fx)^2\tanh^-}{a^2d}$$

Mathematica [A] time = 10.85, size = 951, normalized size = 1.13

$$\frac{12\left(-bd^2x^2\log\left(1-e^{-i(c+dx)}\right)f^2 + bd^2x^2\log\left(1+e^{-i(c+dx)}\right)f^2 + 2b\left(idx\text{Li}_2\left(-e^{-i(c+dx)}\right) + \text{Li}_3\left(-e^{-i(c+dx)}\right)\right)f^2 - 2}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x]^2*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),
x]
```

```
[Out] (12*(((-2*I)*a*d^2*(e + f*x)^2)/(-1 + E^((2*I)*c)) - 2*d*f*(b*d*e - a*f)*x*
Log[1 - E^((-I)*(c + d*x))] - b*d^2*f^2*x^2*Log[1 - E^((-I)*(c + d*x))] + 2
*d*f*(b*d*e + a*f)*x*Log[1 + E^((-I)*(c + d*x))] + b*d^2*f^2*x^2*Log[1 + E^
((-I)*(c + d*x))] + I*d*e*(b*d*e - 2*a*f)*(d*x + I*Log[1 - E^(I*(c + d*x))]
) + d*e*(b*d*e + 2*a*f)*((-I)*d*x + Log[1 + E^(I*(c + d*x))]) + (2*I)*f*(b*
d*e + a*f)*PolyLog[2, -E^((-I)*(c + d*x))] + (2*I)*f*(-(b*d*e) + a*f)*PolyL
og[2, E^((-I)*(c + d*x))] + 2*b*f^2*(I*d*x*PolyLog[2, -E^((-I)*(c + d*x))]
+ PolyLog[3, -E^((-I)*(c + d*x))]) - (2*I)*b*f^2*(d*x*PolyLog[2, E^((-I)*(c
 + d*x))] - I*PolyLog[3, E^((-I)*(c + d*x))])) - ((12*I)*Sqrt[-(a^2 - b^2)^
2]*(-2*Sqrt[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, (b*E^(I*(c + d*x)))/((-I)*a
 + Sqrt[-a^2 + b^2])] + 2*Sqrt[a^2 - b^2]*d*f*(e + f*x)*PolyLog[2, -((b*E^(
I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))] - I*(d^2*(2*Sqrt[-a^2 + b^2]*e^2*A
rcTan[(I*a + b*E^(I*(c + d*x)))/Sqrt[a^2 - b^2]] + Sqrt[a^2 - b^2]*f*x*(2*e
 + f*x)*(Log[1 - (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - Log[1 +
 (b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2])])) + 2*Sqrt[a^2 - b^2]*f^2*Po
lyLog[3, (b*E^(I*(c + d*x)))/((-I)*a + Sqrt[-a^2 + b^2])] - 2*Sqrt[a^2 - b^
2]*f^2*PolyLog[3, -((b*E^(I*(c + d*x)))/(I*a + Sqrt[-a^2 + b^2]))])))/b^2 +
 (a*Csc[c]*Csc[c + d*x]*(-2*a^2*d^3*x*(3*e^2 + 3*e*f*x + f^2*x^2)*Cos[d*x]
+ 2*a^2*d^3*x*(3*e^2 + 3*e*f*x + f^2*x^2)*Cos[2*c + d*x] + 3*b*(-(a*(-2*f^2
 + d^2*(e + f*x)^2)*Cos[c + 2*d*x]) + a*(-2*f^2 + d^2*(e + f*x)^2)*Cos[3*c
+ 2*d*x] + 2*d*(e + f*x)*(2*b*d*(e + f*x)*Sin[d*x] + 4*a*f*Sin[c]*Sin[c + d
*x]^2))))/b^2)/(12*a^2*d^3)
```

fricas [C] time = 0.95, size = 3085, normalized size = 3.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="fricas")
```

```
[Out] 1/12*(24*a^2*b*d*f^2*x - 12*b^3*f^2*polylog(3, cos(d*x + c) + I*sin(d*x + c
))*sin(d*x + c) - 12*b^3*f^2*polylog(3, cos(d*x + c) - I*sin(d*x + c))*sin(
d*x + c) + 12*b^3*f^2*polylog(3, -cos(d*x + c) + I*sin(d*x + c))*sin(d*x +
c) + 12*b^3*f^2*polylog(3, -cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + 2
4*a^2*b*d*e*f - 12*(a^2*b - b^3)*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*
(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 12*(a^2*b - b^3)*f^2*sqrt(-(a
^2 - b^2)/b^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b
*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) -
 12*(a^2*b - b^3)*f^2*sqrt(-(a^2 - b^2)/b^2)*polylog(3, 1/2*(-2*I*a*cos(d*x
 + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2
 - b^2)/b^2))/b)*sin(d*x + c) + 12*(a^2*b - b^3)*f^2*sqrt(-(a^2 - b^2)/b^2)
*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c)
 - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 2*(6*I*(a^2*
```

```
b - b^3)*d*f^2*x + 6*I*(a^2*b - b^3)*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1
/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x
 + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*(-6*I*(a^2*b -
 b^3)*d*f^2*x - 6*I*(a^2*b - b^3)*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*
(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*(-6*I*(a^2*b - b^
3)*d*f^2*x - 6*I*(a^2*b - b^3)*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2
*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c)
)*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*(6*I*(a^2*b - b^3)*
d*f^2*x + 6*I*(a^2*b - b^3)*d*e*f)*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*
a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 6*((a^2*b - b^3)*d^2*e^2
 - 2*(a^2*b - b^3)*c*d*e*f + (a^2*b - b^3)*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*
log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*
I*a)*sin(d*x + c) + 6*((a^2*b - b^3)*d^2*e^2 - 2*(a^2*b - b^3)*c*d*e*f + (a
^2*b - b^3)*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) - 2*I*b*si
n(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) - 6*((a^2*b -
 b^3)*d^2*e^2 - 2*(a^2*b - b^3)*c*d*e*f + (a^2*b - b^3)*c^2*f^2)*sqrt(-(a^2
 - b^2)/b^2)*log(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 -
b^2)/b^2) + 2*I*a)*sin(d*x + c) - 6*((a^2*b - b^3)*d^2*e^2 - 2*(a^2*b - b^3
)*c*d*e*f + (a^2*b - b^3)*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(-2*b*cos(d*x
+ c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c
) + 6*((a^2*b - b^3)*d^2*f^2*x^2 + 2*(a^2*b - b^3)*d^2*e*f*x + 2*(a^2*b - b
^3)*c*d*e*f - (a^2*b - b^3)*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*
cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 6*((a^2*b - b^3)*d^2*f^2*x^2 +
 2*(a^2*b - b^3)*d^2*e*f*x + 2*(a^2*b - b^3)*c*d*e*f - (a^2*b - b^3)*c^2*f^
2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) -
2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(
d*x + c) + 6*((a^2*b - b^3)*d^2*f^2*x^2 + 2*(a^2*b - b^3)*d^2*e*f*x + 2*(a^
2*b - b^3)*c*d*e*f - (a^2*b - b^3)*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*
(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x +
 c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 6*((a^2*b - b^3)*d^2*f
^2*x^2 + 2*(a^2*b - b^3)*d^2*e*f*x + 2*(a^2*b - b^3)*c*d*e*f - (a^2*b - b^3
)*c^2*f^2)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*
x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b
)/b)*sin(d*x + c) - 24*(a^2*b*d*f^2*x + a^2*b*d*e*f)*cos(d*x + c)^2 + (12*I
*b^3*d*f^2*x + 12*I*b^3*d*e*f - 12*I*a*b^2*f^2)*dilog(cos(d*x + c) + I*sin(
d*x + c))*sin(d*x + c) + (-12*I*b^3*d*f^2*x - 12*I*b^3*d*e*f + 12*I*a*b^2*f
^2)*dilog(cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + (12*I*b^3*d*f^2*x +
 12*I*b^3*d*e*f + 12*I*a*b^2*f^2)*dilog(-cos(d*x + c) + I*sin(d*x + c))*sin
(d*x + c) + (-12*I*b^3*d*f^2*x - 12*I*b^3*d*e*f - 12*I*a*b^2*f^2)*dilog(-co
s(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + 6*(b^3*d^2*f^2*x^2 + b^3*d^2*e^
2 + 2*a*b^2*d*e*f + 2*(b^3*d^2*e*f + a*b^2*d*f^2)*x)*log(cos(d*x + c) + I*s
in(d*x + c) + 1)*sin(d*x + c) + 6*(b^3*d^2*f^2*x^2 + b^3*d^2*e^2 + 2*a*b^2*
```

```
d*e*f + 2*(b^3*d^2*e*f + a*b^2*d*f^2)*x)*log(cos(d*x + c) - I*sin(d*x + c)
+ 1)*sin(d*x + c) - 6*(b^3*d^2*e^2 - 2*(b^3*c + a*b^2)*d*e*f + (b^3*c^2 + 2
*a*b^2*c)*f^2)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2)*sin(d*x +
c) - 6*(b^3*d^2*e^2 - 2*(b^3*c + a*b^2)*d*e*f + (b^3*c^2 + 2*a*b^2*c)*f^2)*
log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) - 6*(b^3*d^2
*f^2*x^2 + 2*b^3*c*d*e*f - (b^3*c^2 + 2*a*b^2*c)*f^2 + 2*(b^3*d^2*e*f - a*b
^2*d*f^2)*x)*log(-cos(d*x + c) + I*sin(d*x + c) + 1)*sin(d*x + c) - 6*(b^3*
d^2*f^2*x^2 + 2*b^3*c*d*e*f - (b^3*c^2 + 2*a*b^2*c)*f^2 + 2*(b^3*d^2*e*f -
a*b^2*d*f^2)*x)*log(-cos(d*x + c) - I*sin(d*x + c) + 1)*sin(d*x + c) - 12*(
a*b^2*d^2*f^2*x^2 + 2*a*b^2*d^2*e*f*x + a*b^2*d^2*e^2)*cos(d*x + c) - 4*(a^
3*d^3*f^2*x^3 + 3*a^3*d^3*e*f*x^2 + 3*a^3*d^3*e^2*x + 3*(a^2*b*d^2*f^2*x^2
+ 2*a^2*b*d^2*e*f*x + a^2*b*d^2*e^2 - 2*a^2*b*f^2)*cos(d*x + c))*sin(d*x +
c))/(a^2*b^2*d^3*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

maple [F] time = 6.58, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2} \left(\cos^{2}\left(dx+c\right)\right) \left(\cot^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^2*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*cot(c + d*x)^2*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + fx\right)^{2} \cos^{2}\left(c + dx\right) \cot^{2}\left(c + dx\right)}{a + b \sin\left(c + dx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)**2*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)**2*cos(c + d*x)**2*cot(c + d*x)**2/(a + b*sin(c + d*x)),
 x)
```

3.343 $\int \frac{(e+fx)\cos^2(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=517

$$-\frac{f\left(a^2-b^2\right)^{3/2}\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2b^2d^2}+\frac{f\left(a^2-b^2\right)^{3/2}\text{Li}_2\left(\frac{ibe^{i(c+dx)}}{a+\sqrt{a^2-b^2}}\right)}{a^2b^2d^2}+\frac{f\left(a^2-b^2\right)\sin(c+dx)}{a^2bd^2}-\frac{i\left(a^2-b^2\right)^{3/2}(e+fx)\log\left(\right.}{a^2b^2d}$$

```
[Out] -e*x/a+(1-1/b^2*a^2)*e*x/a-1/2*f*x^2/a+1/2*(1-1/b^2*a^2)*f*x^2/a+2*b*(f*x+e
)*arctanh(exp(I*(d*x+c)))/a^2/d-b*(f*x+e)*cos(d*x+c)/a^2/d-(a^2-b^2)*(f*x+e
)*cos(d*x+c)/a^2/b/d-(f*x+e)*cot(d*x+c)/a/d+f*ln(sin(d*x+c))/a/d^2-I*(a^2-b
^2)^(3/2)*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b^2/d+I*
(a^2-b^2)^(3/2)*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b^
2/d+I*b*f*polylog(2,exp(I*(d*x+c)))/a^2/d^2-I*b*f*polylog(2,-exp(I*(d*x+c))
)/a^2/d^2-(a^2-b^2)^(3/2)*f*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)
))/a^2/b^2/d^2+(a^2-b^2)^(3/2)*f*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^
(1/2)))/a^2/b^2/d^2+b*f*sin(d*x+c)/a^2/d^2+(a^2-b^2)*f*sin(d*x+c)/a^2/b/d^2
```

Rubi [A] time = 1.14, antiderivative size = 517, normalized size of antiderivative = 1.00, number of steps used = 38, number of rules used = 16, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.471, Rules used = {4543, 4408, 3310, 3720, 3475, 4405, 2633, 3296, 2637, 4183, 2279, 2391, 4525, 3323, 2264, 2190}

$$-\frac{f\left(a^2-b^2\right)^{3/2}\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2b^2d^2}+\frac{f\left(a^2-b^2\right)^{3/2}\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{a^2b^2d^2}-\frac{ibf\text{PolyLog}\left(2,-e^{i(c+dx)}\right)}{a^2d^2}+\frac{ibf\text{Poly}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x]^2*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -((e*x)/a) + ((1 - a^2/b^2)*e*x)/a - (f*x^2)/(2*a) + ((1 - a^2/b^2)*f*x^2)/
(2*a) + (2*b*(e + f*x)*ArcTanh[E^(I*(c + d*x))])/(a^2*d) - (b*(e + f*x)*Cos
[c + d*x])/(a^2*d) - ((a^2 - b^2)*(e + f*x)*Cos[c + d*x])/(a^2*b*d) - ((e +
 f*x)*Cot[c + d*x])/(a*d) - (I*(a^2 - b^2)^(3/2)*(e + f*x)*Log[1 - (I*b*E^(
I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^2*d) + (I*(a^2 - b^2)^(3/2)*(e
 + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b^2*d) +
 (f*Log[Sin[c + d*x]])/(a*d^2) - (I*b*f*PolyLog[2, -E^(I*(c + d*x))])/(a^2*
d^2) + (I*b*f*PolyLog[2, E^(I*(c + d*x))])/(a^2*d^2) - ((a^2 - b^2)^(3/2)*f
*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^2*d^2) + (
(a^2 - b^2)^(3/2)*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])]
)/(a^2*b^2*d^2) + (b*f*Sin[c + d*x])/(a^2*d^2) + ((a^2 - b^2)*f*Sin[c + d*x
])/(a^2*b*d^2)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2264

```
Int[((F_)^(u_)*((f_.) + (g_.)*(x_))^(m_.))/((a_.) + (b_.)*(F_)^(u_) + (c_.)
*(F_)^(v_)), x_Symbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(2*c)/q, Int[
((f + g*x)^m*F^u)/(b - q + 2*c*F^u), x], x] - Dist[(2*c)/q, Int[((f + g*x)^
m*F^u)/(b + q + 2*c*F^u), x], x]] /; FreeQ[{F, a, b, c, f, g}, x] && EqQ[v,
 2*u] && LinearQ[u, x] && NeQ[b^2 - 4*a*c, 0] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3323

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)]), x_Sy
mbol] :> Dist[2, Int[((c + d*x)^m*E^(I*(e + f*x)))/(I*b + 2*a*E^(I*(e + f*x
)) - I*b*E^(2*I*(e + f*x))), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && NeQ[
a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 3475

```
Int[tan[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Log[RemoveContent[Cos[c + d
*x], x]]/d, x] /; FreeQ[{c, d}, x]
```

Rule 3720

```
Int[((c_.) + (d_.)*(x_))^(m_.)*((b_.)*tan[(e_.) + (f_.)*(x_)])^(n_), x_Symb
ol] :> Simp[(b*(c + d*x)^m*(b*Tan[e + f*x])^(n - 1))/(f*(n - 1)), x] + (-Di
st[(b*d*m)/(f*(n - 1)), Int[(c + d*x)^(m - 1)*(b*Tan[e + f*x])^(n - 1), x],
 x] - Dist[b^2, Int[(c + d*x)^m*(b*Tan[e + f*x])^(n - 2), x], x]) /; FreeQ[
{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4405

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)], x_Symbol] :> -Simp[((c + d*x)^m*Cos[a + b*x]^(n + 1))/(b*(n + 1)
), x] + Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cos[a + b*x]^(n + 1),
 x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
```

```
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cos^2(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\cos^2(c+dx)\cot^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cos^3(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= -\frac{\int (e+fx)\cos^2(c+dx)\,dx}{a} + \frac{\int (e+fx)\cot^2(c+dx)\,dx}{a} - \frac{b\int (e+fx}{}$$

$$= -\frac{f\cos^2(c+dx)}{4ad^2} - \frac{(e+fx)\cot(c+dx)}{ad} - \frac{(e+fx)\cos(c+dx)\sin(c+}{2ad}$$

$$= -\frac{3ex}{2a} - \frac{3fx^2}{4a} - \frac{(e+fx)\cot(c+dx)}{ad} + \frac{f\log(\sin(c+dx))}{ad^2} + \frac{\int (e+fx}{2a}$$

$$= -\frac{ex}{a} - \frac{a\left(1-\frac{b^2}{a^2}\right)ex}{b^2} - \frac{fx^2}{2a} - \frac{a\left(1-\frac{b^2}{a^2}\right)fx^2}{2b^2} + \frac{2b(e+fx)\tanh^{-1}\left(e^{i(c+}\right.}{a^2d}$$

$$= -\frac{ex}{a} - \frac{a\left(1-\frac{b^2}{a^2}\right)ex}{b^2} - \frac{fx^2}{2a} - \frac{a\left(1-\frac{b^2}{a^2}\right)fx^2}{2b^2} + \frac{2b(e+fx)\tanh^{-1}\left(e^{i(c+}\right.}{a^2d}$$

$$= -\frac{ex}{a} - \frac{a\left(1-\frac{b^2}{a^2}\right)ex}{b^2} - \frac{fx^2}{2a} - \frac{a\left(1-\frac{b^2}{a^2}\right)fx^2}{2b^2} + \frac{2b(e+fx)\tanh^{-1}\left(e^{i(c+}\right.}{a^2d}$$

$$= -\frac{ex}{a} - \frac{a\left(1-\frac{b^2}{a^2}\right)ex}{b^2} - \frac{fx^2}{2a} - \frac{a\left(1-\frac{b^2}{a^2}\right)fx^2}{2b^2} + \frac{2b(e+fx)\tanh^{-1}\left(e^{i(c+}\right.}{a^2d}$$

$$= -\frac{ex}{a} - \frac{a\left(1-\frac{b^2}{a^2}\right)ex}{b^2} - \frac{fx^2}{2a} - \frac{a\left(1-\frac{b^2}{a^2}\right)fx^2}{2b^2} + \frac{2b(e+fx)\tanh^{-1}\left(e^{i(c+}\right.}{a^2d}$$

Mathematica [A] time = 11.89, size = 1019, normalized size = 1.97

$$\frac{(de+dfx)\left(\frac{2(de-cf)\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{\sqrt{a^2-b^2}} - \frac{if\left(\log\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)\log\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)+\sqrt{b^2-a^2}}{-ia+b+\sqrt{b^2-a^2}}\right)+\text{Li}_2\left(\frac{a\left(1-i\tan\left(\frac{1}{2}(c+dx)\right)\right)}{a+i\left(b+\sqrt{b^2-a^2}\right)}\right)\right)}{\sqrt{b^2-a^2}} + \frac{if\left(\log\left(i\,\text{ta}\right.\right.}{}\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Cos[c + d*x]^2*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/2*(a*(c + d*x)*(2*d*e - 2*c*f + f*(c + d*x)))/(b^2*d^2) - ((d*e - c*f +
f*(c + d*x))*Cos[c + d*x])/(b*d^2) + ((-(d*e*Cos[(c + d*x)/2]) + c*f*Cos[(c
```

```
 + d*x)/2] - f*(c + d*x)*Cos[(c + d*x)/2])*Csc[(c + d*x)/2])/(2*a*d^2) + (f
*Log[Sin[c + d*x]])/(a*d^2) - (b*e*Log[Tan[(c + d*x)/2]])/(a^2*d) + (b*c*f*
Log[Tan[(c + d*x)/2]])/(a^2*d^2) - (b*f*((c + d*x)*(Log[1 - E^(I*(c + d*x))
] - Log[1 + E^(I*(c + d*x))]) + I*(PolyLog[2, -E^(I*(c + d*x))] - PolyLog[2
, E^(I*(c + d*x))])))/(a^2*d^2) + ((a^2 - b^2)^2*(d*e + d*f*x)*((2*(d*e - c
*f)*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^2 - b^2]])/Sqrt[a^2 - b^2] - (I*
f*(Log[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/
2])/((-I)*a + b + Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 - I*Tan[(c + d*x)/2
]))/(a + I*(b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1 + I*Ta
n[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b +
Sqrt[-a^2 + b^2])] + PolyLog[2, (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sq
rt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2] + (I*f*(Log[1 - I*Tan[(c + d*x)/2]]*Lo
g[-((b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2]
))] + PolyLog[2, (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])]))
/Sqrt[-a^2 + b^2] - (I*f*(Log[1 + I*Tan[(c + d*x)/2]]*Log[(b - Sqrt[-a^2 +
b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])] + PolyLog[2, (a +
I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))]))/Sqrt[-a^2 + b^2]))
/(a^2*b^2*d^2*(d*e - c*f + I*f*Log[1 - I*Tan[(c + d*x)/2]] - I*f*Log[1 + I*
Tan[(c + d*x)/2]])) + (Sec[(c + d*x)/2]*(d*e*Sin[(c + d*x)/2] - c*f*Sin[(c
+ d*x)/2] + f*(c + d*x)*Sin[(c + d*x)/2]))/(2*a*d^2) + (f*Sin[c + d*x])/(b*
d^2)
```

fricas [B] time = 0.78, size = 1768, normalized size = 3.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -1/4*(4*a^2*b*f*cos(d*x + c)^2 - 2*I*b^3*f*dilog(cos(d*x + c) + I*sin(d*x +
 c))*sin(d*x + c) + 2*I*b^3*f*dilog(cos(d*x + c) - I*sin(d*x + c))*sin(d*x
+ c) - 2*I*b^3*f*dilog(-cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 2*I*b
^3*f*dilog(-cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 2*I*(a^2*b - b^3)
*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c)
 + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b +
1)*sin(d*x + c) + 2*I*(a^2*b - b^3)*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(2*
I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))
*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 2*I*(a^2*b - b^3)*f*sq
rt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2
*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*s
in(d*x + c) - 2*I*(a^2*b - b^3)*f*sqrt(-(a^2 - b^2)/b^2)*dilog(-1/2*(-2*I*a
*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sq
rt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - 4*a^2*b*f - 2*((a^2*b - b
^3)*d*e - (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d*x + c) +
```

```
2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) - 2*(
(a^2*b - b^3)*d*e - (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(2*b*cos(d
*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x
+ c) + 2*((a^2*b - b^3)*d*e - (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*log
(-2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*
a)*sin(d*x + c) + 2*((a^2*b - b^3)*d*e - (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^
2)/b^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/
b^2) - 2*I*a)*sin(d*x + c) - 2*((a^2*b - b^3)*d*f*x + (a^2*b - b^3)*c*f)*sq
rt(-(a^2 - b^2)/b^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*
cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x +
 c) + 2*((a^2*b - b^3)*d*f*x + (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*lo
g(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(
d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 2*((a^2*b - b^3)*
d*f*x + (a^2*b - b^3)*c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x +
 c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
 b^2)/b^2) + 2*b)/b)*sin(d*x + c) + 2*((a^2*b - b^3)*d*f*x + (a^2*b - b^3)*
c*f)*sqrt(-(a^2 - b^2)/b^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c)
 - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*s
in(d*x + c) - 2*(b^3*d*f*x + b^3*d*e + a*b^2*f)*log(cos(d*x + c) + I*sin(d*
x + c) + 1)*sin(d*x + c) - 2*(b^3*d*f*x + b^3*d*e + a*b^2*f)*log(cos(d*x +
c) - I*sin(d*x + c) + 1)*sin(d*x + c) + 2*(b^3*d*e - (b^3*c + a*b^2)*f)*log
(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) + 2*(b^3*d*e -
(b^3*c + a*b^2)*f)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2)*sin(d*
x + c) + 2*(b^3*d*f*x + b^3*c*f)*log(-cos(d*x + c) + I*sin(d*x + c) + 1)*si
n(d*x + c) + 2*(b^3*d*f*x + b^3*c*f)*log(-cos(d*x + c) - I*sin(d*x + c) + 1
)*sin(d*x + c) + 4*(a*b^2*d*f*x + a*b^2*d*e)*cos(d*x + c) + 2*(a^3*d^2*f*x^
2 + 2*a^3*d^2*e*x + 2*(a^2*b*d*f*x + a^2*b*d*e)*cos(d*x + c))*sin(d*x + c))
/(a^2*b^2*d^2*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

maple [B] time = 1.86, size = 1863, normalized size = 3.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] -2*I/a^2/d^2*b^2*f*c/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)
/(-a^2+b^2)^(1/2))+1/d^2/b^2*a^2*f/(-a^2+b^2)^(1/2)*ln((-I*a-b*exp(I*(d*x+c
))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*c+1/d*b^2/a^2*f/(-a^2+b^2)^(1
/2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*x+
1/d^2*b^2/a^2*f/(-a^2+b^2)^(1/2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2)
)/(-I*a+(-a^2+b^2)^(1/2)))*c+1/d/b^2*a^2*f/(-a^2+b^2)^(1/2)*ln((-I*a-b*exp(
I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*x-I/d^2*b^2/a^2*f/(-a
^2+b^2)^(1/2)*dilog((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^
2)^(1/2)))-I/d^2/b^2*a^2*f/(-a^2+b^2)^(1/2)*dilog((-I*a-b*exp(I*(d*x+c))+(-
a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))+1/a^2/d*b*f*ln(exp(I*(d*x+c))+1)*x
+1/a^2/d^2*b*f*c*ln(exp(I*(d*x+c))-1)-I/a^2/d^2*b*f*dilog(exp(I*(d*x+c)))-I
/a^2/d^2*b*f*dilog(exp(I*(d*x+c))+1)-2/a/d^2*f*ln(exp(I*(d*x+c)))-2*I*(f*x+
e)/d/a/(exp(2*I*(d*x+c))-1)+I/a^2/d^2*b^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*e
xp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-1/a^2/d*b^2*f/(-a^2
+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2
)))*x-1/a^2/d^2*b^2*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^
(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c+2*I/a^2/d*b^2*e/(-a^2+b^2)^(1/2)*arctan(1/
2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))+1/a/d^2*f*ln(exp(I*(d*x+c))+
1)+1/a/d^2*f*ln(exp(I*(d*x+c))-1)-a^2/b^2/d*f/(-a^2+b^2)^(1/2)*ln((I*a+b*ex
p(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-a^2/b^2/d^2*f/(-a^
2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/
2)))*c+I*a^2/b^2/d^2*f/(-a^2+b^2)^(1/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b
^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))+2*I*a^2/b^2/d*e/(-a^2+b^2)^(1/2)*arctan(
1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))-2*I*a^2/b^2/d^2*f*c/(-a^2+
b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))+2/d*f/(-
a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(
1/2)))*x+2/d^2*f/(-a^2+b^2)^(1/2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2)
)/(I*a+(-a^2+b^2)^(1/2)))*c-1/2*(d*f*x+I*f+d*e)/d^2/b*exp(I*(d*x+c))+1/a^2/
d*b*e*ln(exp(I*(d*x+c))+1)-1/a^2/d*b*e*ln(exp(I*(d*x+c))-1)-1/2*(d*f*x-I*f+
d*e)/d^2/b*exp(-I*(d*x+c))+4*I/d^2*f*c/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*e
xp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1/2))-1/2*a*f*x^2/b^2-a*e*x/b^2-2/d*f/(-a^2+
b^2)^(1/2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/
2)))*x-2/d^2*f/(-a^2+b^2)^(1/2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))
/(-I*a+(-a^2+b^2)^(1/2)))*c+2*I/d^2*f/(-a^2+b^2)^(1/2)*dilog((-I*a-b*exp(I*
(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))-2*I/d^2*f/(-a^2+b^2)^(1
/2)*dilog((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-4
*I/d*e/(-a^2+b^2)^(1/2)*arctan(1/2*(2*I*b*exp(I*(d*x+c))-2*a)/(-a^2+b^2)^(1
/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
```

```
maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*cot(c + d*x)^2*(e + f*x))/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e + f x\right) \cos^{2}{\left(c + d x \right)} \cot^{2}{\left(c + d x \right)}}{a + b \sin{\left(c + d x \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)**2*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral((e + f*x)*cos(c + d*x)**2*cot(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.344 $\int \frac{\cos^2(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=104

$$\frac{2\left(a^2-b^2\right)^{3/2}\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{a^2b^2d}+\frac{b\tanh^{-1}(\cos(c+dx))}{a^2d}-\frac{ax}{b^2}-\frac{\cot(c+dx)}{ad}-\frac{\cos(c+dx)}{bd}$$

```
[Out] -a*x/b^2+2*(a^2-b^2)^(3/2)*arctan((b+a*tan(1/2*d*x+1/2*c))/(a^2-b^2)^(1/2))
/a^2/b^2/d+b*arctanh(cos(d*x+c))/a^2/d-cos(d*x+c)/b/d-cot(d*x+c)/a/d
```

Rubi [A] time = 0.27, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {2894, 3057, 2660, 618, 204, 3770}

$$\frac{2\left(a^2-b^2\right)^{3/2}\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)}{a^2b^2d}+\frac{b\tanh^{-1}(\cos(c+dx))}{a^2d}-\frac{ax}{b^2}-\frac{\cot(c+dx)}{ad}-\frac{\cos(c+dx)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Cos[c + d*x]^2*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -((a*x)/b^2) + (2*(a^2 - b^2)^(3/2)*ArcTan[(b + a*Tan[(c + d*x)/2])/Sqrt[a^
2 - b^2]])/(a^2*b^2*d) + (b*ArcTanh[Cos[c + d*x]])/(a^2*d) - Cos[c + d*x]/(
b*d) - Cot[c + d*x]/(a*d)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2660

```
Int[((a_) + (b_.)*sin[(c_.) + (d_.)*(x_)])^(-1), x_Symbol] :> With[{e = Fre
eFactors[Tan[(c + d*x)/2], x]}, Dist[(2*e)/d, Subst[Int[1/(a + 2*b*e*x + a*
e^2*x^2), x], x, Tan[(c + d*x)/2]/e], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[
```

```
a^2 - b^2, 0]
```

Rule 2894

```
Int[cos[(e_.) + (f_.)*(x_)]^4*((d_.)*sin[(e_.) + (f_.)*(x_)])^(n_)*((a_) +
(b_.)*sin[(e_.) + (f_.)*(x_)])^(m_), x_Symbol] :> Simp[(Cos[e + f*x]*(a + b
*Sin[e + f*x])^(m + 1)*(d*Sin[e + f*x])^(n + 1))/(a*d*f*(n + 1)), x] + (Dis
t[1/(a*b*d*(n + 1)*(m + n + 4)), Int[(a + b*Sin[e + f*x])^m*(d*Sin[e + f*x]
)^(n + 1)*Simp[a^2*(n + 1)*(n + 2) - b^2*(m + n + 2)*(m + n + 4) + a*b*(m +
 3)*Sin[e + f*x] - (a^2*(n + 1)*(n + 3) - b^2*(m + n + 3)*(m + n + 4))*Sin[
e + f*x]^2, x], x], x] - Simp[(Cos[e + f*x]*(a + b*Sin[e + f*x])^(m + 1)*(d
*Sin[e + f*x])^(n + 2))/(b*d^2*f*(m + n + 4)), x]) /; FreeQ[{a, b, d, e, f,
 m}, x] && NeQ[a^2 - b^2, 0] && (IGtQ[m, 0] || IntegersQ[2*m, 2*n]) &&  !m
< -1 && LtQ[n, -1] && NeQ[m + n + 4, 0]
```

Rule 3057

```
Int[((A_.) + (B_.)*sin[(e_.) + (f_.)*(x_)] + (C_.)*sin[(e_.) + (f_.)*(x_)]^
2)/(((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])*((c_.) + (d_.)*sin[(e_.) + (f_.)
*(x_)])), x_Symbol] :> Simp[(C*x)/(b*d), x] + (Dist[(A*b^2 - a*b*B + a^2*C)
/(b*(b*c - a*d)), Int[1/(a + b*Sin[e + f*x]), x], x] - Dist[(c^2*C - B*c*d
+ A*d^2)/(d*(b*c - a*d)), Int[1/(c + d*Sin[e + f*x]), x], x]) /; FreeQ[{a,
b, c, d, e, f, A, B, C}, x] && NeQ[b*c - a*d, 0] && NeQ[a^2 - b^2, 0] && Ne
Q[c^2 - d^2, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rubi steps

$$\int \frac{\cos^2(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = -\frac{\cos(c+dx)}{bd} - \frac{\cot(c+dx)}{ad} - \frac{\int \frac{\csc(c+dx)\left(b^2+2ab\sin(c+dx)+a^2\sin^2(c+dx)\right)}{a+b\sin(c+dx)}\,dx}{ab}$$

$$= -\frac{ax}{b^2} - \frac{\cos(c+dx)}{bd} - \frac{\cot(c+dx)}{ad} - \frac{b\int \csc(c+dx)\,dx}{a^2} + \frac{\left(a^2-b^2\right)^2 \int \frac{1}{a+b\sin(c}}{a^2b^2}$$

$$= -\frac{ax}{b^2} + \frac{b\tanh^{-1}(\cos(c+dx))}{a^2d} - \frac{\cos(c+dx)}{bd} - \frac{\cot(c+dx)}{ad} + \frac{\left(2\left(a^2-b^2\right)^2\right)S}{}$$

$$= -\frac{ax}{b^2} + \frac{b\tanh^{-1}(\cos(c+dx))}{a^2d} - \frac{\cos(c+dx)}{bd} - \frac{\cot(c+dx)}{ad} - \frac{\left(4\left(a^2-b^2\right)^2\right)S}{}$$

$$= -\frac{ax}{b^2} + \frac{2\left(a^2-b^2\right)^{3/2}\tan^{-1}\left(\frac{b+a\tan\left(\frac{1}{2}(c+dx)\right)}{\sqrt{a^2-b^2}}\right)}{a^2b^2d} + \frac{b\tanh^{-1}(\cos(c+dx))}{a^2d} - \frac{\cos(c}{b}$$

Mathematica [A] time = 0.82, size = 146, normalized size = 1.40

$$-\frac{2a^3c+2a^3dx-4\left(a^2-b^2\right)^{3/2}\tan^{-1}\left(\frac{a\tan\left(\frac{1}{2}(c+dx)\right)+b}{\sqrt{a^2-b^2}}\right)+2a^2b\cos(c+dx)-ab^2\tan\left(\frac{1}{2}(c+dx)\right)+ab^2\cot\left(\frac{1}{2}(c+\right.}{2a^2b^2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cos[c + d*x]^2*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -1/2*(2*a^3*c + 2*a^3*d*x - 4*(a^2 - b^2)^(3/2)*ArcTan[(b + a*Tan[(c + d*x)
/2])/Sqrt[a^2 - b^2]] + 2*a^2*b*Cos[c + d*x] + a*b^2*Cot[(c + d*x)/2] - 2*b
^3*Log[Cos[(c + d*x)/2]] + 2*b^3*Log[Sin[(c + d*x)/2]] - a*b^2*Tan[(c + d*x
)/2])/(a^2*b^2*d)
```

fricas [A] time = 0.61, size = 396, normalized size = 3.81

$$\left[\frac{b^3\log\left(\frac{1}{2}\cos(dx+c)+\frac{1}{2}\right)\sin(dx+c)-b^3\log\left(-\frac{1}{2}\cos(dx+c)+\frac{1}{2}\right)\sin(dx+c)-2ab^2\cos(dx+c)-\left(a^2-\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] [1/2*(b^3*log(1/2*cos(d*x + c) + 1/2)*sin(d*x + c) - b^3*log(-1/2*cos(d*x +
 c) + 1/2)*sin(d*x + c) - 2*a*b^2*cos(d*x + c) - (a^2 - b^2)*sqrt(-a^2 + b^
2)*log(((2*a^2 - b^2)*cos(d*x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2 + 2*(
a*cos(d*x + c)*sin(d*x + c) + b*cos(d*x + c))*sqrt(-a^2 + b^2))/(b^2*cos(d*
x + c)^2 - 2*a*b*sin(d*x + c) - a^2 - b^2))*sin(d*x + c) - 2*(a^3*d*x + a^2
*b*cos(d*x + c))*sin(d*x + c))/(a^2*b^2*d*sin(d*x + c)), 1/2*(b^3*log(1/2*c
os(d*x + c) + 1/2)*sin(d*x + c) - b^3*log(-1/2*cos(d*x + c) + 1/2)*sin(d*x
+ c) - 2*a*b^2*cos(d*x + c) - 2*(a^2 - b^2)^(3/2)*arctan(-(a*sin(d*x + c) +
 b)/(sqrt(a^2 - b^2)*cos(d*x + c)))*sin(d*x + c) - 2*(a^3*d*x + a^2*b*cos(d
*x + c))*sin(d*x + c))/(a^2*b^2*d*sin(d*x + c))]
```

giac [B] time = 1.02, size = 221, normalized size = 2.12

$$-\frac{\frac{6\,(dx+c)a}{b^2}+\frac{6\,b\log\left(\left|\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)\right|\right)}{a^2}-\frac{3\,\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)}{a}-\frac{12\left(a^4-2\,a^2b^2+b^4\right)\left(\pi\left\lfloor\frac{dx+c}{2\,\pi}+\frac{1}{2}\right\rfloor\mathrm{sgn}(a)+\arctan\left(\frac{a\tan\left(\frac{1}{2}\,dx+\frac{1}{2}\,c\right)+b}{\sqrt{a^2-b^2}}\right)\right)}{\sqrt{a^2-b^2}\,a^2b^2}-\frac{2\,b^2\tan\left(\frac{1}{2}\,dx+\right.}{}}{6\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/6*(6*(d*x + c)*a/b^2 + 6*b*log(abs(tan(1/2*d*x + 1/2*c)))/a^2 - 3*tan(1/
2*d*x + 1/2*c)/a - 12*(a^4 - 2*a^2*b^2 + b^4)*(pi*floor(1/2*(d*x + c)/pi +
1/2)*sgn(a) + arctan((a*tan(1/2*d*x + 1/2*c) + b)/sqrt(a^2 - b^2)))/(sqrt(a
^2 - b^2)*a^2*b^2) - (2*b^2*tan(1/2*d*x + 1/2*c)^3 - 3*a*b*tan(1/2*d*x + 1/
2*c)^2 - 12*a^2*tan(1/2*d*x + 1/2*c) + 2*b^2*tan(1/2*d*x + 1/2*c) - 3*a*b)/
((tan(1/2*d*x + 1/2*c)^3 + tan(1/2*d*x + 1/2*c))*a^2*b))/d
```

maple [B] time = 0.17, size = 249, normalized size = 2.39

$$\frac{\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}{2ad}-\frac{2}{db\left(1+\tan^2\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}-\frac{2a\arctan\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,b^2}-\frac{1}{2ad\tan\left(\frac{dx}{2}+\frac{c}{2}\right)}-\frac{b\ln\left(\tan\left(\frac{dx}{2}+\frac{c}{2}\right)\right)}{d\,a^2}+\frac{2\,\mathrm{arcta}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] 1/2/a/d*tan(1/2*d*x+1/2*c)-2/d/b/(1+tan(1/2*d*x+1/2*c)^2)-2/d/b^2*a*arctan(
tan(1/2*d*x+1/2*c))-1/2/a/d/tan(1/2*d*x+1/2*c)-1/d/a^2*b*ln(tan(1/2*d*x+1/2
*c))+2/d/b^2/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)/(a^2-b
^2)^(1/2))*a^2-4/d/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/2*c)+2*b)/
```

```
(a^2-b^2)^(1/2))+2/d*b^2/a^2/(a^2-b^2)^(1/2)*arctan(1/2*(2*a*tan(1/2*d*x+1/
2*c)+2*b)/(a^2-b^2)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^2*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*b^2-4*a^2>0)', see `assume?` for
more details)Is 4*b^2-4*a^2 positive or negative?
```

mupad [B] time = 6.11, size = 1167, normalized size = 11.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^2*cot(c + d*x)^2)/(a + b*sin(c + d*x)),x)
```

```
[Out] (atan((16*b^6*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(3/2)
- 4*a^12*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2) - 4*a
^6*sin(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(3/2) - 12*a^3*b^
3*cos(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(3/2) + a^5*b^7*co
s(c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2) + 4*a^7*b^5*cos(
c/2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2) - 6*a^9*b^3*cos(c/
2 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2) - 29*a^2*b^4*sin(c/2
 + (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(3/2) + 18*a^4*b^2*sin(c/2
+ (d*x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(3/2) + a^2*b^10*sin(c/2 + (
d*x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2) - 4*a^4*b^8*sin(c/2 + (d*
x)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2) + 22*a^6*b^6*sin(c/2 + (d*x
)/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2) - 32*a^8*b^4*sin(c/2 + (d*x)
/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2) + 18*a^10*b^2*sin(c/2 + (d*x)
/2)*(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2) + 8*a*b^5*cos(c/2 + (d*x)/2)*
(b^6 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(3/2) + 5*a^5*b*cos(c/2 + (d*x)/2)*(b^6
 - a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(3/2) + 2*a^11*b*cos(c/2 + (d*x)/2)*(b^6 -
a^6 - 3*a^2*b^4 + 3*a^4*b^2)^(1/2))/(b^15*sin(c/2 + (d*x)/2)*16i + a*b^14*c
os(c/2 + (d*x)/2)*8i - a^14*b*sin(c/2 + (d*x)/2)*3i - a^3*b^12*cos(c/2 + (d
*x)/2)*48i + a^5*b^10*cos(c/2 + (d*x)/2)*123i - a^7*b^8*cos(c/2 + (d*x)/2)*
167i + a^9*b^6*cos(c/2 + (d*x)/2)*126i - a^11*b^4*cos(c/2 + (d*x)/2)*51i +
a^13*b^2*cos(c/2 + (d*x)/2)*9i - a^2*b^13*sin(c/2 + (d*x)/2)*100i + a^4*b^1
1*sin(c/2 + (d*x)/2)*269i - a^6*b^9*sin(c/2 + (d*x)/2)*390i + a^8*b^7*sin(c
/2 + (d*x)/2)*323i - a^10*b^5*sin(c/2 + (d*x)/2)*151i + a^12*b^3*sin(c/2 +
```

```
(d*x)/2)*36i))*(-(a + b)^3*(a - b)^3)^(1/2)*2i)/(a^2*b^2*d) - (b*log(sin(c/
2 + (d*x)/2)/cos(c/2 + (d*x)/2)))/(a^2*d) - sin(2*c + 2*d*x)/(2*b*d*sin(c +
 d*x)) - (2*a*atan((a^3*cos(c/2 + (d*x)/2) + b^3*sin(c/2 + (d*x)/2))/(b^3*c
os(c/2 + (d*x)/2) - a^3*sin(c/2 + (d*x)/2)))))/(b^2*d) - cot(c + d*x)/(a*d)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\cos^2(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**2*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Integral(cos(c + d*x)**2*cot(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.345 $\int \frac{(e+fx)^3 \cos^3(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=1432

$$-\frac{i\left(a^2-b^2\right)^2(e+fx)^4}{4a^2b^3f}+\frac{ib(e+fx)^4}{4a^2f}+\frac{b\sin^2(c+dx)(e+fx)^3}{2a^2d}+\frac{\left(a^2-b^2\right)\sin^2(c+dx)(e+fx)^3}{2a^2bd}-\frac{\csc(c+dx)(e+}{ad}$$

```
[Out] -(f*x+e)^3*csc(d*x+c)/a/d-6*f^3*polylog(3,-exp(I*(d*x+c)))/a/d^4+6*f^3*poly
log(3,exp(I*(d*x+c)))/a/d^4+3/2*I*b*f*(f*x+e)^2*polylog(2,exp(2*I*(d*x+c)))
/a^2/d^2-3*f*(f*x+e)^2*cos(d*x+c)/a/d^2+6*f^2*(f*x+e)*sin(d*x+c)/a/d^3-1/4*
b*(f*x+e)^3/a^2/d-(f*x+e)^3*sin(d*x+c)/a/d+6*I*f^2*(f*x+e)*polylog(2,-exp(I
*(d*x+c)))/a/d^3+(a^2-b^2)^2*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)
^(1/2)))/a^2/b^3/d+(a^2-b^2)^2*(f*x+e)^3*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^
2)^(1/2)))/a^2/b^3/d-b*(f*x+e)^3*ln(1-exp(2*I*(d*x+c)))/a^2/d+3/4*(a^2-b^2)
*f*(f*x+e)^2*cos(d*x+c)*sin(d*x+c)/a^2/b/d^2-3*(a^2-b^2)*f*(f*x+e)^2*cos(d*
x+c)/a/b^2/d^2+6*(a^2-b^2)*f^2*(f*x+e)*sin(d*x+c)/a/b^2/d^3-3/8*(a^2-b^2)*f
^3*cos(d*x+c)*sin(d*x+c)/a^2/b/d^4+3/4*b*f*(f*x+e)^2*cos(d*x+c)*sin(d*x+c)/
a^2/d^2-3/4*(a^2-b^2)*f^2*(f*x+e)*sin(d*x+c)^2/a^2/b/d^3-3*I*(a^2-b^2)^2*f*
(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b^3/d^2-3*I
*(a^2-b^2)^2*f*(f*x+e)^2*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/
a^2/b^3/d^2+6*I*(a^2-b^2)^2*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(
1/2)))/a^2/b^3/d^4+6*I*(a^2-b^2)^2*f^3*polylog(4,I*b*exp(I*(d*x+c))/(a+(a^2
-b^2)^(1/2)))/a^2/b^3/d^4+6*(a^2-b^2)^2*f^2*(f*x+e)*polylog(3,I*b*exp(I*(d*
x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b^3/d^3+6*(a^2-b^2)^2*f^2*(f*x+e)*polylog(3,
I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b^3/d^3+6*f^3*cos(d*x+c)/a/d^4+
1/4*I*b*(f*x+e)^4/a^2/f-3/2*b*f^2*(f*x+e)*polylog(3,exp(2*I*(d*x+c)))/a^2/d
^3-6*I*f^2*(f*x+e)*polylog(2,exp(I*(d*x+c)))/a/d^3-3/4*I*b*f^3*polylog(4,ex
p(2*I*(d*x+c)))/a^2/d^4+3/8*(a^2-b^2)*f^3*x/a^2/b/d^3+6*(a^2-b^2)*f^3*cos(d
*x+c)/a/b^2/d^4-(a^2-b^2)*(f*x+e)^3*sin(d*x+c)/a/b^2/d-3/8*b*f^3*cos(d*x+c)
*sin(d*x+c)/a^2/d^4-3/4*b*f^2*(f*x+e)*sin(d*x+c)^2/a^2/d^3+1/2*(a^2-b^2)*(f
*x+e)^3*sin(d*x+c)^2/a^2/b/d-1/4*I*(a^2-b^2)^2*(f*x+e)^4/a^2/b^3/f+3/8*b*f^
3*x/a^2/d^3-1/4*(a^2-b^2)*(f*x+e)^3/a^2/b/d+1/2*b*(f*x+e)^3*sin(d*x+c)^2/a^
2/d-6*f*(f*x+e)^2*arctanh(exp(I*(d*x+c)))/a/d^2
```

Rubi [A] time = 2.95, antiderivative size = 1432, normalized size of antiderivative = 1.00, number of steps used = 85, number of rules used = 21, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {4543, 4408, 3311, 3296, 2638, 3310, 4410, 4183, 2531, 2282, 6589, 4405, 32, 2635, 8, 4404, 3717, 2190, 6609, 4525, 4519}

$$-\frac{i\left(a^2-b^2\right)^2(e+fx)^4}{4a^2b^3f}+\frac{ib(e+fx)^4}{4a^2f}+\frac{b\sin^2(c+dx)(e+fx)^3}{2a^2d}+\frac{\left(a^2-b^2\right)\sin^2(c+dx)(e+fx)^3}{2a^2bd}-\frac{\csc(c+dx)(e+}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^3*Cos[c + d*x]^3*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] (3*b*f^3*x)/(8*a^2*d^3) + (3*(a^2 - b^2)*f^3*x)/(8*a^2*b*d^3) - (b*(e + f*x
)^3)/(4*a^2*d) - ((a^2 - b^2)*(e + f*x)^3)/(4*a^2*b*d) + ((I/4)*b*(e + f*x)
^4)/(a^2*f) - ((I/4)*(a^2 - b^2)^2*(e + f*x)^4)/(a^2*b^3*f) - (6*f*(e + f*x
)^2*ArcTanh[E^(I*(c + d*x))])/(a*d^2) + (6*f^3*Cos[c + d*x])/(a*d^4) + (6*(
a^2 - b^2)*f^3*Cos[c + d*x])/(a*b^2*d^4) - (3*f*(e + f*x)^2*Cos[c + d*x])/(
a*d^2) - (3*(a^2 - b^2)*f*(e + f*x)^2*Cos[c + d*x])/(a*b^2*d^2) - ((e + f*x
)^3*Csc[c + d*x])/(a*d) + ((a^2 - b^2)^2*(e + f*x)^3*Log[1 - (I*b*E^(I*(c +
 d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^3*d) + ((a^2 - b^2)^2*(e + f*x)^3*Lo
g[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b^3*d) - (b*(e + f
*x)^3*Log[1 - E^((2*I)*(c + d*x))])/(a^2*d) + ((6*I)*f^2*(e + f*x)*PolyLog[
2, -E^(I*(c + d*x))])/(a*d^3) - ((6*I)*f^2*(e + f*x)*PolyLog[2, E^(I*(c + d
*x))])/(a*d^3) - ((3*I)*(a^2 - b^2)^2*f*(e + f*x)^2*PolyLog[2, (I*b*E^(I*(c
 + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^3*d^2) - ((3*I)*(a^2 - b^2)^2*f*(e
 + f*x)^2*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b^3
*d^2) + (((3*I)/2)*b*f*(e + f*x)^2*PolyLog[2, E^((2*I)*(c + d*x))])/(a^2*d^
2) - (6*f^3*PolyLog[3, -E^(I*(c + d*x))])/(a*d^4) + (6*f^3*PolyLog[3, E^(I*
(c + d*x))])/(a*d^4) + (6*(a^2 - b^2)^2*f^2*(e + f*x)*PolyLog[3, (I*b*E^(I*
(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^3*d^3) + (6*(a^2 - b^2)^2*f^2*(e
 + f*x)*PolyLog[3, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b^3*d
^3) - (3*b*f^2*(e + f*x)*PolyLog[3, E^((2*I)*(c + d*x))])/(2*a^2*d^3) + ((6
*I)*(a^2 - b^2)^2*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2]
)])/(a^2*b^3*d^4) + ((6*I)*(a^2 - b^2)^2*f^3*PolyLog[4, (I*b*E^(I*(c + d*x)
))/(a + Sqrt[a^2 - b^2])])/(a^2*b^3*d^4) - (((3*I)/4)*b*f^3*PolyLog[4, E^((
2*I)*(c + d*x))])/(a^2*d^4) + (6*f^2*(e + f*x)*Sin[c + d*x])/(a*d^3) + (6*(
a^2 - b^2)*f^2*(e + f*x)*Sin[c + d*x])/(a*b^2*d^3) - ((e + f*x)^3*Sin[c + d
*x])/(a*d) - ((a^2 - b^2)*(e + f*x)^3*Sin[c + d*x])/(a*b^2*d) - (3*b*f^3*Co
s[c + d*x]*Sin[c + d*x])/(8*a^2*d^4) - (3*(a^2 - b^2)*f^3*Cos[c + d*x]*Sin[
c + d*x])/(8*a^2*b*d^4) + (3*b*f*(e + f*x)^2*Cos[c + d*x]*Sin[c + d*x])/(4*
a^2*d^2) + (3*(a^2 - b^2)*f*(e + f*x)^2*Cos[c + d*x]*Sin[c + d*x])/(4*a^2*b
*d^2) - (3*b*f^2*(e + f*x)*Sin[c + d*x]^2)/(4*a^2*d^3) - (3*(a^2 - b^2)*f^2
*(e + f*x)*Sin[c + d*x]^2)/(4*a^2*b*d^3) + (b*(e + f*x)^3*Sin[c + d*x]^2)/(
2*a^2*d) + ((a^2 - b^2)*(e + f*x)^3*Sin[c + d*x]^2)/(2*a^2*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
```

```
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4405

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)], x_Symbol] :> -Simp[((c + d*x)^m*Cos[a + b*x]^(n + 1))/(b*(n + 1)
), x] + Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cos[a + b*x]^(n + 1),
 x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
```

```
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4410

```
Int[Cot[(a_.) + (b_.)*(x_)]^(p_.)*Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csc[a + b*x]^n)/(b*n), x]
+ Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csc[a + b*x]^n, x], x] /; FreeQ[{
a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(e+fx)^3\cos^3(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^3\cos^3(c+dx)\cot^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^3\cos^4(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}}{a}$$

$$= -\frac{\int (e+fx)^3\cos^3(c+dx)\,dx}{a} + \frac{\int (e+fx)^3\cos(c+dx)\cot^2(c+dx)\,d}{a}$$

$$= -\frac{f(e+fx)^2\cos^3(c+dx)}{3ad^2} - \frac{(e+fx)^3\cos^2(c+dx)\sin(c+dx)}{3ad} - 2\int($$

$$= \frac{2f^3\cos^3(c+dx)}{27ad^4} - \frac{(e+fx)^3\csc(c+dx)}{ad} - \frac{5(e+fx)^3\sin(c+dx)}{3ad} +$$

$$= \frac{ib(e+fx)^4}{4a^2f} - \frac{i\left(a^2-b^2\right)^2(e+fx)^4}{4a^2b^3f} - \frac{6f(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} -$$

$$= \frac{ib(e+fx)^4}{4a^2f} - \frac{i\left(a^2-b^2\right)^2(e+fx)^4}{4a^2b^3f} - \frac{6f(e+fx)^2\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} +$$

$$= -\frac{b(e+fx)^3}{4a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{4bd} + \frac{ib(e+fx)^4}{4a^2f} - \frac{i\left(a^2-b^2\right)^2(e+fx}{4a^2b^3f}$$

$$= \frac{3bf^3x}{8a^2d^3} + \frac{3\left(1-\frac{b^2}{a^2}\right)f^3x}{8bd^3} - \frac{b(e+fx)^3}{4a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{4bd} + \frac{ib(e+f}{4a^2f}$$

$$= \frac{3bf^3x}{8a^2d^3} + \frac{3\left(1-\frac{b^2}{a^2}\right)f^3x}{8bd^3} - \frac{b(e+fx)^3}{4a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{4bd} + \frac{ib(e+f}{4a^2f}$$

$$= \frac{3bf^3x}{8a^2d^3} + \frac{3\left(1-\frac{b^2}{a^2}\right)f^3x}{8bd^3} - \frac{b(e+fx)^3}{4a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)(e+fx)^3}{4bd} + \frac{ib(e+f}{4a^2f}$$

Mathematica [B] time = 49.23, size = 3944, normalized size = 2.75

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^3*Cos[c + d*x]^3*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),
x]

[Out] ((-e^3 - 3*e^2*f*x - 3*e*f^2*x^2 - f^3*x^3)*Csc[c + d*x])/(a*d) - (((-I)*b*
(e + f*x)^4)/((-1 + E^((2*I)*c))*f) + (6*e*f*(b*d*e - 2*a*f)*x*Log[1 - E^((
-I)*(c + d*x))])/d^2 + (6*f^2*(b*d*e - a*f)*x^2*Log[1 - E^((-I)*(c + d*x))]
)/d^2 + (2*b*f^3*x^3*Log[1 - E^((-I)*(c + d*x))])/d + (6*e*f*(b*d*e + 2*a*f
)*x*Log[1 + E^((-I)*(c + d*x))])/d^2 + (6*f^2*(b*d*e + a*f)*x^2*Log[1 + E^(
(-I)*(c + d*x))])/d^2 + (2*b*f^3*x^3*Log[1 + E^((-I)*(c + d*x))])/d + (2*e^
2*(b*d*e - 3*a*f)*((-I)*d*x + Log[1 - E^(I*(c + d*x))]))/d^2 + (2*e^2*(b*d*
e + 3*a*f)*((-I)*d*x + Log[1 + E^(I*(c + d*x))]))/d^2 + ((6*I)*e*f*(b*d*e +
 2*a*f)*PolyLog[2, -E^((-I)*(c + d*x))])/d^3 + ((6*I)*e*f*(b*d*e - 2*a*f)*P
olyLog[2, E^((-I)*(c + d*x))])/d^3 + (12*f^2*(b*d*e + a*f)*(I*d*x*PolyLog[2
, -E^((-I)*(c + d*x))] + PolyLog[3, -E^((-I)*(c + d*x))]))/d^4 + (12*f^2*(b
*d*e - a*f)*(I*d*x*PolyLog[2, E^((-I)*(c + d*x))] + PolyLog[3, E^((-I)*(c +
 d*x))]))/d^4 + (6*b*f^3*(I*d^2*x^2*PolyLog[2, -E^((-I)*(c + d*x))] + 2*d*x
*PolyLog[3, -E^((-I)*(c + d*x))] - (2*I)*PolyLog[4, -E^((-I)*(c + d*x))]))/
d^4 + (6*b*f^3*(I*d^2*x^2*PolyLog[2, E^((-I)*(c + d*x))] + 2*d*x*PolyLog[3,
 E^((-I)*(c + d*x))] - (2*I)*PolyLog[4, E^((-I)*(c + d*x))]))/d^4)/(2*a^2)
+ ((a^2 - b^2)^2*((-4*I)*d^4*e^3*E^((2*I)*c)*x - (6*I)*d^4*e^2*E^((2*I)*c)*
f*x^2 - (4*I)*d^4*e*E^((2*I)*c)*f^2*x^3 - I*d^4*E^((2*I)*c)*f^3*x^4 - (2*I)
*d^3*e^3*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c + d*x))))] + (2*
I)*d^3*e^3*E^((2*I)*c)*ArcTan[(2*a*E^(I*(c + d*x)))/(b*(-1 + E^((2*I)*(c +
d*x))))] - d^3*e^3*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E^((2*I)*(c +
d*x)))^2] + d^3*e^3*E^((2*I)*c)*Log[4*a^2*E^((2*I)*(c + d*x)) + b^2*(-1 + E
^((2*I)*(c + d*x)))^2] - 6*d^3*e^2*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E
^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e^2*E^((2*I)*c)*f*x*Log[1
 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] -
6*d^3*e*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b
^2)*E^((2*I)*c)])] + 6*d^3*e*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x
)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 2*d^3*f^3*x^3*Log[1 +
 (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 2*
d^3*E^((2*I)*c)*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) - Sqrt[(
-a^2 + b^2)*E^((2*I)*c)])] - 6*d^3*e^2*f*x*Log[1 + (b*E^(I*(2*c + d*x)))/(I
*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 6*d^3*e^2*E^((2*I)*c)*f*x*L
og[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])
] - 6*d^3*e*f^2*x^2*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2
 + b^2)*E^((2*I)*c)])] + 6*d^3*e*E^((2*I)*c)*f^2*x^2*Log[1 + (b*E^(I*(2*c +
 d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 2*d^3*f^3*x^3*Log
[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)])]
+ 2*d^3*E^((2*I)*c)*f^3*x^3*Log[1 + (b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sq
rt[(-a^2 + b^2)*E^((2*I)*c)])] - (6*I)*d^2*(-1 + E^((2*I)*c))*f*(e + f*x)^2
*PolyLog[2, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*
```

I)*c)])] - (6*I)*d^2*(-1 + E^((2*I)*c))*f*(e + f*x)^2*PolyLog[2, -((b*E^(I*
(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] - 12*d*e*f^2
*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*
I)*c)])] + 12*d*e*E^((2*I)*c)*f^2*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(
I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - 12*d*f^3*x*PolyLog[3, (I*b*E^(I
*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] + 12*d*E^((2
*I)*c)*f^3*x*PolyLog[3, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 +
 b^2)*E^((2*I)*c)])] - 12*d*e*f^2*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E
^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + 12*d*e*E^((2*I)*c)*f^2*PolyLog
[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))
] - 12*d*f^3*x*PolyLog[3, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2
 + b^2)*E^((2*I)*c)]))] + 12*d*E^((2*I)*c)*f^3*x*PolyLog[3, -((b*E^(I*(2*c
+ d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] - (12*I)*f^3*Poly
Log[4, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c) + I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)
])] + (12*I)*E^((2*I)*c)*f^3*PolyLog[4, (I*b*E^(I*(2*c + d*x)))/(a*E^(I*c)
+ I*Sqrt[(-a^2 + b^2)*E^((2*I)*c)])] - (12*I)*f^3*PolyLog[4, -((b*E^(I*(2*c
 + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2)*E^((2*I)*c)]))] + (12*I)*E^((2*I
)*c)*f^3*PolyLog[4, -((b*E^(I*(2*c + d*x)))/(I*a*E^(I*c) + Sqrt[(-a^2 + b^2
)*E^((2*I)*c)]))]))/(2*a^2*b^3*d^4*(-1 + E^((2*I)*c))) - (I*(-a^2 + 2*b^2)*
e^3*x*(1 + Cos[2*c] + I*Sin[2*c]))/(b^3*(-1 + Cos[2*c] + I*Sin[2*c])) - (((
3*I)/2)*(-a^2 + 2*b^2)*e^2*f*x^2*(1 + Cos[2*c] + I*Sin[2*c]))/(b^3*(-1 + Co
s[2*c] + I*Sin[2*c])) - (I*(-a^2 + 2*b^2)*e*f^2*x^3*(1 + Cos[2*c] + I*Sin[2
c]))/(b^3(-1 + Cos[2*c] + I*Sin[2*c])) - ((I/4)*(-a^2 + 2*b^2)*f^3*x^4*(1
 + Cos[2*c] + I*Sin[2*c]))/(b^3*(-1 + Cos[2*c] + I*Sin[2*c])) + (((-1/2*I)*
a*f^3*x^3*Cos[c])/(b^2*d) - (a*f^3*x^3*Sin[c])/(2*b^2*d) + ((-I)*d^3*e^3 -
3*d^2*e^2*f + (6*I)*d*e*f^2 + 6*f^3)*((a*Cos[c])/(2*b^2*d^4) - ((I/2)*a*Sin
[c])/(b^2*d^4)) + (a*d^2*e^2*f - (2*I)*a*d*e*f^2 - 2*a*f^3)*((((-3*I)/2)*x*
Cos[c])/(b^2*d^3) - (3*x*Sin[c])/(2*b^2*d^3)) + (a*d*e*f^2 - I*a*f^3)*((((-
3*I)/2)*x^2*Cos[c])/(b^2*d^2) - (3*x^2*Sin[c])/(2*b^2*d^2)))*(Cos[d*x] - I*
Sin[d*x]) + (((I/2)*a*f^3*x^3*Cos[c])/(b^2*d) - (a*f^3*x^3*Sin[c])/(2*b^2*d
) + (I*d^3*e^3 - 3*d^2*e^2*f - (6*I)*d*e*f^2 + 6*f^3)*((a*Cos[c])/(2*b^2*d^
4) + ((I/2)*a*Sin[c])/(b^2*d^4)) + (((3*I)/2)*x^2*(a*d*e*f^2*Cos[c] + I*a*f
^3*Cos[c] + I*a*d*e*f^2*Sin[c] - a*f^3*Sin[c]))/(b^2*d^2) + (((3*I)/2)*x*(a
*d^2*e^2*f*Cos[c] + (2*I)*a*d*e*f^2*Cos[c] - 2*a*f^3*Cos[c] + I*a*d^2*e^2*f
*Sin[c] - 2*a*d*e*f^2*Sin[c] - (2*I)*a*f^3*Sin[c]))/(b^2*d^3))*(Cos[d*x] +
I*Sin[d*x]) + (-1/8*(f^3*x^3*Cos[2*c])/(b*d) + ((I/8)*f^3*x^3*Sin[2*c])/(b*
d) + (4*d^3*e^3 - (6*I)*d^2*e^2*f - 6*d*e*f^2 + (3*I)*f^3)*(-1/32*Cos[2*c]/
(b*d^4) + ((I/32)*Sin[2*c])/(b*d^4)) + ((2*I)*d^2*e^2*f + 2*d*e*f^2 - I*f^3
)*((((3*I)/16)*x*Cos[2*c])/(b*d^3) + (3*x*Sin[2*c])/(16*b*d^3)) + ((2*I)*d*
e*f^2 + f^3)*((((3*I)/16)*x^2*Cos[2*c])/(b*d^2) + (3*x^2*Sin[2*c])/(16*b*d^
2)))*(Cos[2*d*x] - I*Sin[2*d*x]) + (-1/8*(f^3*x^3*Cos[2*c])/(b*d) - ((I/8)*
f^3*x^3*Sin[2*c])/(b*d) + (4*d^3*e^3 + (6*I)*d^2*e^2*f - 6*d*e*f^2 - (3*I)*
f^3)*(-1/32*Cos[2*c]/(b*d^4) - ((I/32)*Sin[2*c])/(b*d^4)) - (((3*I)/16)*x*(
(-2*I)*d^2*e^2*f*Cos[2*c] + 2*d*e*f^2*Cos[2*c] + I*f^3*Cos[2*c] + 2*d^2*e^2
*f*Sin[2*c] + (2*I)*d*e*f^2*Sin[2*c] - f^3*Sin[2*c]))/(b*d^3) - (((3*I)/16)

```
*x^2*((-2*I)*d*e*f^2*Cos[2*c] + f^3*Cos[2*c] + 2*d*e*f^2*Sin[2*c] + I*f^3*S
in[2*c]))/(b*d^2))*(Cos[2*d*x] + I*Sin[2*d*x])
```

fricas [C] time = 1.37, size = 4936, normalized size = 3.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/8*(8*(a^3*b + a*b^3)*d^3*f^3*x^3 + 24*(a^3*b + a*b^3)*d^3*e*f^2*x^2 + 24
*I*b^4*f^3*polylog(4, cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) - 24*I*b^
4*f^3*polylog(4, cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 24*I*b^4*f^3
*polylog(4, -cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 24*I*b^4*f^3*pol
ylog(4, -cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 48*a^3*b*d*e*f^2 + 8
*(a^3*b + a*b^3)*d^3*e^3 - 24*I*(a^4 - 2*a^2*b^2 + b^4)*f^3*polylog(4, 1/2*
(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - 24*I*(a^4 - 2*a^2*b^2 + b^4)*
f^3*polylog(4, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x +
c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 24*I*(a^4
- 2*a^2*b^2 + b^4)*f^3*polylog(4, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x +
c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d
*x + c) + 24*I*(a^4 - 2*a^2*b^2 + b^4)*f^3*polylog(4, 1/2*(-2*I*a*cos(d*x +
 c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 -
 b^2)/b^2))/b)*sin(d*x + c) + 3*(2*a^2*b^2*d^2*f^3*x^2 + 4*a^2*b^2*d^2*e*f^
2*x + 2*a^2*b^2*d^2*e^2*f - a^2*b^2*f^3)*cos(d*x + c)^3 - 8*(a^3*b*d^3*f^3*
x^3 + 3*a^3*b*d^3*e*f^2*x^2 + a^3*b*d^3*e^3 - 6*a^3*b*d*e*f^2 + 3*(a^3*b*d^
3*e^2*f - 2*a^3*b*d*f^3)*x)*cos(d*x + c)^2 - (12*I*(a^4 - 2*a^2*b^2 + b^4)*
d^2*f^3*x^2 + 24*I*(a^4 - 2*a^2*b^2 + b^4)*d^2*e*f^2*x + 12*I*(a^4 - 2*a^2*
b^2 + b^4)*d^2*e^2*f)*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2
*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*s
in(d*x + c) - (12*I*(a^4 - 2*a^2*b^2 + b^4)*d^2*f^3*x^2 + 24*I*(a^4 - 2*a^2
*b^2 + b^4)*d^2*e*f^2*x + 12*I*(a^4 - 2*a^2*b^2 + b^4)*d^2*e^2*f)*dilog(-1/
2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x
+ c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - (-12*I*(a^4 - 2*a
^2*b^2 + b^4)*d^2*f^3*x^2 - 24*I*(a^4 - 2*a^2*b^2 + b^4)*d^2*e*f^2*x - 12*I
*(a^4 - 2*a^2*b^2 + b^4)*d^2*e^2*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*s
in(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2)
+ 2*b)/b + 1)*sin(d*x + c) - (-12*I*(a^4 - 2*a^2*b^2 + b^4)*d^2*f^3*x^2 - 2
4*I*(a^4 - 2*a^2*b^2 + b^4)*d^2*e*f^2*x - 12*I*(a^4 - 2*a^2*b^2 + b^4)*d^2*
e^2*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x +
c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) -
(12*I*b^4*d^2*f^3*x^2 + 12*I*b^4*d^2*e^2*f - 24*I*a*b^3*d*e*f^2 + 24*I*(b^4
*d^2*e*f^2 - a*b^3*d*f^3)*x)*dilog(cos(d*x + c) + I*sin(d*x + c))*sin(d*x +
```

c) - (-12*I*b^4*d^2*f^3*x^2 - 12*I*b^4*d^2*e^2*f + 24*I*a*b^3*d*e*f^2 - 24
I(b^4*d^2*e*f^2 - a*b^3*d*f^3)*x)*dilog(cos(d*x + c) - I*sin(d*x + c))*si
n(d*x + c) - (-12*I*b^4*d^2*f^3*x^2 - 12*I*b^4*d^2*e^2*f - 24*I*a*b^3*d*e*f
^2 - 24*I*(b^4*d^2*e*f^2 + a*b^3*d*f^3)*x)*dilog(-cos(d*x + c) + I*sin(d*x
+ c))*sin(d*x + c) - (12*I*b^4*d^2*f^3*x^2 + 12*I*b^4*d^2*e^2*f + 24*I*a*b^
3*d*e*f^2 + 24*I*(b^4*d^2*e*f^2 + a*b^3*d*f^3)*x)*dilog(-cos(d*x + c) - I*s
in(d*x + c))*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(a^4 - 2
*a^2*b^2 + b^4)*c*d^2*e^2*f + 3*(a^4 - 2*a^2*b^2 + b^4)*c^2*d*e*f^2 - (a^4
- 2*a^2*b^2 + b^4)*c^3*f^3)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b
*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*
d^3*e^3 - 3*(a^4 - 2*a^2*b^2 + b^4)*c*d^2*e^2*f + 3*(a^4 - 2*a^2*b^2 + b^4)
*c^2*d*e*f^2 - (a^4 - 2*a^2*b^2 + b^4)*c^3*f^3)*log(2*b*cos(d*x + c) - 2*I*
b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) - 4*((a^4
 - 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(a^4 - 2*a^2*b^2 + b^4)*c*d^2*e^2*f + 3*(a^
4 - 2*a^2*b^2 + b^4)*c^2*d*e*f^2 - (a^4 - 2*a^2*b^2 + b^4)*c^3*f^3)*log(-2*
b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*s
in(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*d^3*e^3 - 3*(a^4 - 2*a^2*b^2 + b^4
)*c*d^2*e^2*f + 3*(a^4 - 2*a^2*b^2 + b^4)*c^2*d*e*f^2 - (a^4 - 2*a^2*b^2 +
b^4)*c^3*f^3)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 -
 b^2)/b^2) - 2*I*a)*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*d^3*f^3*x^3 +
 3*(a^4 - 2*a^2*b^2 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 - 2*a^2*b^2 + b^4)*d^3*e^
2*f*x + 3*(a^4 - 2*a^2*b^2 + b^4)*c*d^2*e^2*f - 3*(a^4 - 2*a^2*b^2 + b^4)*c
^2*d*e*f^2 + (a^4 - 2*a^2*b^2 + b^4)*c^3*f^3)*log(1/2*(2*I*a*cos(d*x + c) +
 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)
/b^2) + 2*b)/b)*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 3*(
a^4 - 2*a^2*b^2 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 - 2*a^2*b^2 + b^4)*d^3*e^2*f*
x + 3*(a^4 - 2*a^2*b^2 + b^4)*c*d^2*e^2*f - 3*(a^4 - 2*a^2*b^2 + b^4)*c^2*d
*e*f^2 + (a^4 - 2*a^2*b^2 + b^4)*c^3*f^3)*log(1/2*(2*I*a*cos(d*x + c) + 2*a
*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2
) + 2*b)/b)*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 3*(a^4
- 2*a^2*b^2 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 - 2*a^2*b^2 + b^4)*d^3*e^2*f*x +
3*(a^4 - 2*a^2*b^2 + b^4)*c*d^2*e^2*f - 3*(a^4 - 2*a^2*b^2 + b^4)*c^2*d*e*f
^2 + (a^4 - 2*a^2*b^2 + b^4)*c^3*f^3)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*si
n(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) +
 2*b)/b)*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*d^3*f^3*x^3 + 3*(a^4 - 2
*a^2*b^2 + b^4)*d^3*e*f^2*x^2 + 3*(a^4 - 2*a^2*b^2 + b^4)*d^3*e^2*f*x + 3*(
a^4 - 2*a^2*b^2 + b^4)*c*d^2*e^2*f - 3*(a^4 - 2*a^2*b^2 + b^4)*c^2*d*e*f^2
+ (a^4 - 2*a^2*b^2 + b^4)*c^3*f^3)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d
x + c) - 2(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*
b)/b)*sin(d*x + c) + 4*(b^4*d^3*f^3*x^3 + b^4*d^3*e^3 + 3*a*b^3*d^2*e^2*f +
 3*(b^4*d^3*e*f^2 + a*b^3*d^2*f^3)*x^2 + 3*(b^4*d^3*e^2*f + 2*a*b^3*d^2*e*f
^2)*x)*log(cos(d*x + c) + I*sin(d*x + c) + 1)*sin(d*x + c) + 4*(b^4*d^3*f^3
*x^3 + b^4*d^3*e^3 + 3*a*b^3*d^2*e^2*f + 3*(b^4*d^3*e*f^2 + a*b^3*d^2*f^3)*
x^2 + 3*(b^4*d^3*e^2*f + 2*a*b^3*d^2*e*f^2)*x)*log(cos(d*x + c) - I*sin(d*x
 + c) + 1)*sin(d*x + c) + 4*(b^4*d^3*e^3 - 3*(b^4*c + a*b^3)*d^2*e^2*f + 3*

```
(b^4*c^2 + 2*a*b^3*c)*d*e*f^2 - (b^4*c^3 + 3*a*b^3*c^2)*f^3)*log(-1/2*cos(d
*x + c) + 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) + 4*(b^4*d^3*e^3 - 3*(b^4*
c + a*b^3)*d^2*e^2*f + 3*(b^4*c^2 + 2*a*b^3*c)*d*e*f^2 - (b^4*c^3 + 3*a*b^3
*c^2)*f^3)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) +
 4*(b^4*d^3*f^3*x^3 + 3*b^4*c*d^2*e^2*f - 3*(b^4*c^2 + 2*a*b^3*c)*d*e*f^2 +
 (b^4*c^3 + 3*a*b^3*c^2)*f^3 + 3*(b^4*d^3*e*f^2 - a*b^3*d^2*f^3)*x^2 + 3*(b
^4*d^3*e^2*f - 2*a*b^3*d^2*e*f^2)*x)*log(-cos(d*x + c) + I*sin(d*x + c) + 1
)*sin(d*x + c) + 4*(b^4*d^3*f^3*x^3 + 3*b^4*c*d^2*e^2*f - 3*(b^4*c^2 + 2*a*
b^3*c)*d*e*f^2 + (b^4*c^3 + 3*a*b^3*c^2)*f^3 + 3*(b^4*d^3*e*f^2 - a*b^3*d^2
*f^3)*x^2 + 3*(b^4*d^3*e^2*f - 2*a*b^3*d^2*e*f^2)*x)*log(-cos(d*x + c) - I*
sin(d*x + c) + 1)*sin(d*x + c) - 24*((a^4 - 2*a^2*b^2 + b^4)*d*f^3*x + (a^4
 - 2*a^2*b^2 + b^4)*d*e*f^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d
*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*
sin(d*x + c) - 24*((a^4 - 2*a^2*b^2 + b^4)*d*f^3*x + (a^4 - 2*a^2*b^2 + b^4
)*d*e*f^2)*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos
(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - 24*
((a^4 - 2*a^2*b^2 + b^4)*d*f^3*x + (a^4 - 2*a^2*b^2 + b^4)*d*e*f^2)*polylog
(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*s
in(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - 24*((a^4 - 2*a^2*b^2
 + b^4)*d*f^3*x + (a^4 - 2*a^2*b^2 + b^4)*d*e*f^2)*polylog(3, 1/2*(-2*I*a*c
os(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt
(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 24*(b^4*d*f^3*x + b^4*d*e*f^2 - a*b^3
*f^3)*polylog(3, cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 24*(b^4*d*f^
3*x + b^4*d*e*f^2 - a*b^3*f^3)*polylog(3, cos(d*x + c) - I*sin(d*x + c))*si
n(d*x + c) + 24*(b^4*d*f^3*x + b^4*d*e*f^2 + a*b^3*f^3)*polylog(3, -cos(d*x
 + c) + I*sin(d*x + c))*sin(d*x + c) + 24*(b^4*d*f^3*x + b^4*d*e*f^2 + a*b^
3*f^3)*polylog(3, -cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 24*(2*a^3*
b*d*f^3 - (a^3*b + a*b^3)*d^3*e^2*f)*x - 3*(2*a^2*b^2*d^2*f^3*x^2 + 4*a^2*b
^2*d^2*e*f^2*x + 2*a^2*b^2*d^2*e^2*f - a^2*b^2*f^3)*cos(d*x + c) - (2*a^2*b
^2*d^3*f^3*x^3 + 6*a^2*b^2*d^3*e*f^2*x^2 + 2*a^2*b^2*d^3*e^3 - 3*a^2*b^2*d*
e*f^2 - 2*(2*a^2*b^2*d^3*f^3*x^3 + 6*a^2*b^2*d^3*e*f^2*x^2 + 2*a^2*b^2*d^3*
e^3 - 3*a^2*b^2*d*e*f^2 + 3*(2*a^2*b^2*d^3*e^2*f - a^2*b^2*d*f^3)*x)*cos(d*
x + c)^2 + 3*(2*a^2*b^2*d^3*e^2*f - a^2*b^2*d*f^3)*x - 24*(a^3*b*d^2*f^3*x^
2 + 2*a^3*b*d^2*e*f^2*x + a^3*b*d^2*e^2*f - 2*a^3*b*f^3)*cos(d*x + c))*sin(
d*x + c))/(a^2*b^3*d^4*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

maple [F] time = 11.01, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{3} \left(\cos^{3}\left(dx+c\right)\right) \left(\cot^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] int((f*x+e)^3*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*cot(c + d*x)^2*(e + f*x)^3)/(a + b*sin(c + d*x)),x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*cos(d*x+c)**3*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

3.346 $\int \frac{(e+fx)^2 \cos^3(c+dx) \cot^2(c+dx)}{a+b \sin(c+dx)} dx$

Optimal. Leaf size=1051

$$-\frac{i\left(a^2-b^2\right)^2(e+fx)^3}{3a^2b^3f}+\frac{ib(e+fx)^3}{3a^2f}+\frac{b\sin^2(c+dx)(e+fx)^2}{2a^2d}+\frac{\left(a^2-b^2\right)\sin^2(c+dx)(e+fx)^2}{2a^2bd}-\frac{\csc(c+dx)(e+}{ad}$$

```
[Out] -(f*x+e)^2*csc(d*x+c)/a/d-1/2*b*e*f*x/a^2/d-1/4*(a^2-b^2)*f^2*x^2/a^2/b/d+2
*(a^2-b^2)*f^2*sin(d*x+c)/a/b^2/d^3-(a^2-b^2)*(f*x+e)^2*sin(d*x+c)/a/b^2/d-
1/4*(a^2-b^2)*f^2*sin(d*x+c)^2/a^2/b/d^3+1/2*(a^2-b^2)*(f*x+e)^2*sin(d*x+c)
^2/a^2/b/d-1/3*I*(a^2-b^2)^2*(f*x+e)^3/a^2/b^3/f-2*f*(f*x+e)*cos(d*x+c)/a/d
^2+I*b*f*(f*x+e)*polylog(2,exp(2*I*(d*x+c)))/a^2/d^2-(f*x+e)^2*sin(d*x+c)/a
/d+(a^2-b^2)^2*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b
^3/d+(a^2-b^2)^2*(f*x+e)^2*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2
/b^3/d+2*(a^2-b^2)^2*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/
a^2/b^3/d^3+2*(a^2-b^2)^2*f^2*polylog(3,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/
2)))/a^2/b^3/d^3-1/2*(a^2-b^2)*e*f*x/a^2/b/d-2*(a^2-b^2)*f*(f*x+e)*cos(d*x+
c)/a/b^2/d^2+1/2*b*f*(f*x+e)*cos(d*x+c)*sin(d*x+c)/a^2/d^2-b*(f*x+e)^2*ln(1
-exp(2*I*(d*x+c)))/a^2/d+1/2*(a^2-b^2)*f*(f*x+e)*cos(d*x+c)*sin(d*x+c)/a^2/
b/d^2-2*I*(a^2-b^2)^2*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(
1/2)))/a^2/b^3/d^2-2*I*(a^2-b^2)^2*f*(f*x+e)*polylog(2,I*b*exp(I*(d*x+c))/(
a+(a^2-b^2)^(1/2)))/a^2/b^3/d^2+2*f^2*sin(d*x+c)/a/d^3+1/3*I*b*(f*x+e)^3/a^
2/f+2*I*f^2*polylog(2,-exp(I*(d*x+c)))/a/d^3-1/4*b*f^2*x^2/a^2/d-1/4*b*f^2*
sin(d*x+c)^2/a^2/d^3+1/2*b*(f*x+e)^2*sin(d*x+c)^2/a^2/d-4*f*(f*x+e)*arctanh
(exp(I*(d*x+c)))/a/d^2-1/2*b*f^2*polylog(3,exp(2*I*(d*x+c)))/a^2/d^3-2*I*f^
2*polylog(2,exp(I*(d*x+c)))/a/d^3
```

Rubi [A] time = 2.24, antiderivative size = 1051, normalized size of antiderivative = 1.00, number of steps used = 60, number of rules used = 20, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556, Rules used = {4543, 4408, 3311, 3296, 2637, 2633, 4410, 4183, 2279, 2391, 4405, 3310, 4404, 3717, 2190, 2531, 2282, 6589, 4525, 4519}

$$-\frac{i\left(a^2-b^2\right)^2(e+fx)^3}{3a^2b^3f}+\frac{ib(e+fx)^3}{3a^2f}+\frac{b\sin^2(c+dx)(e+fx)^2}{2a^2d}+\frac{\left(a^2-b^2\right)\sin^2(c+dx)(e+fx)^2}{2a^2bd}-\frac{\csc(c+dx)(e+}{ad}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)^2*Cos[c + d*x]^3*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(b*e*f*x)/(2*a^2*d) - ((a^2 - b^2)*e*f*x)/(2*a^2*b*d) - (b*f^2*x^2)/(4*a^2
*d) - ((a^2 - b^2)*f^2*x^2)/(4*a^2*b*d) + ((I/3)*b*(e + f*x)^3)/(a^2*f) - (
(I/3)*(a^2 - b^2)^2*(e + f*x)^3)/(a^2*b^3*f) - (4*f*(e + f*x)*ArcTanh[E^(I*
```

```
(c + d*x))])/(a*d^2) - (2*f*(e + f*x)*Cos[c + d*x])/(a*d^2) - (2*(a^2 - b^2
)*f*(e + f*x)*Cos[c + d*x])/(a*b^2*d^2) - ((e + f*x)^2*Csc[c + d*x])/(a*d)
+ ((a^2 - b^2)^2*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 -
b^2])])/(a^2*b^3*d) + ((a^2 - b^2)^2*(e + f*x)^2*Log[1 - (I*b*E^(I*(c + d*x
)))/(a + Sqrt[a^2 - b^2])])/(a^2*b^3*d) - (b*(e + f*x)^2*Log[1 - E^((2*I)*(
c + d*x))])/(a^2*d) + ((2*I)*f^2*PolyLog[2, -E^(I*(c + d*x))])/(a*d^3) - ((
2*I)*f^2*PolyLog[2, E^(I*(c + d*x))])/(a*d^3) - ((2*I)*(a^2 - b^2)^2*f*(e +
 f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^3*d^2
) - ((2*I)*(a^2 - b^2)^2*f*(e + f*x)*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a +
Sqrt[a^2 - b^2])])/(a^2*b^3*d^2) + (I*b*f*(e + f*x)*PolyLog[2, E^((2*I)*(c
+ d*x))])/(a^2*d^2) + (2*(a^2 - b^2)^2*f^2*PolyLog[3, (I*b*E^(I*(c + d*x)))
/(a - Sqrt[a^2 - b^2])])/(a^2*b^3*d^3) + (2*(a^2 - b^2)^2*f^2*PolyLog[3, (I
*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b^3*d^3) - (b*f^2*PolyLog[
3, E^((2*I)*(c + d*x))])/(2*a^2*d^3) + (2*f^2*Sin[c + d*x])/(a*d^3) + (2*(a
^2 - b^2)*f^2*Sin[c + d*x])/(a*b^2*d^3) - ((e + f*x)^2*Sin[c + d*x])/(a*d)
- ((a^2 - b^2)*(e + f*x)^2*Sin[c + d*x])/(a*b^2*d) + (b*f*(e + f*x)*Cos[c +
 d*x]*Sin[c + d*x])/(2*a^2*d^2) + ((a^2 - b^2)*f*(e + f*x)*Cos[c + d*x]*Sin
[c + d*x])/(2*a^2*b*d^2) - (b*f^2*Sin[c + d*x]^2)/(4*a^2*d^3) - ((a^2 - b^2
)*f^2*Sin[c + d*x]^2)/(4*a^2*b*d^3) + (b*(e + f*x)^2*Sin[c + d*x]^2)/(2*a^2
*d) + ((a^2 - b^2)*(e + f*x)^2*Sin[c + d*x]^2)/(2*a^2*b*d)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
```

```
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2633

```
Int[sin[(c_.) + (d_.)*(x_)]^(n_), x_Symbol] :> -Dist[d^(-1), Subst[Int[Expa
nd[(1 - x^2)^((n - 1)/2), x], x], x, Cos[c + d*x]], x] /; FreeQ[{c, d}, x]
&& IGtQ[(n - 1)/2, 0]
```

Rule 2637

```
Int[sin[Pi/2 + (c_.) + (d_.)*(x_)], x_Symbol] :> Simp[Sin[c + d*x]/d, x] /;
 FreeQ[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3311

```
Int[((c_.) + (d_.)*(x_))^(m_)*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbo
l] :> Simp[(d*m*(c + d*x)^(m - 1)*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist
[(b^2*(n - 1))/n, Int[(c + d*x)^m*(b*Sin[e + f*x])^(n - 2), x], x] - Dist[(
d^2*m*(m - 1))/(f^2*n^2), Int[(c + d*x)^(m - 2)*(b*Sin[e + f*x])^n, x], x]
- Simp[(b*(c + d*x)^m*Cos[e + f*x]*(b*Sin[e + f*x])^(n - 1))/(f*n), x]) /;
FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1] && GtQ[m, 1]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 4183

```
Int[csc[(e_.) + (f_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.), x_Symbol] :> Simp[(
-2*(c + d*x)^m*ArcTanh[E^(I*(e + f*x))])/f, x] + (-Dist[(d*m)/f, Int[(c + d
*x)^(m - 1)*Log[1 - E^(I*(e + f*x))], x], x] + Dist[(d*m)/f, Int[(c + d*x)^
(m - 1)*Log[1 + E^(I*(e + f*x))], x], x]) /; FreeQ[{c, d, e, f}, x] && IGtQ
[m, 0]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4405

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)], x_Symbol] :> -Simp[((c + d*x)^m*Cos[a + b*x]^(n + 1))/(b*(n + 1)
), x] + Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cos[a + b*x]^(n + 1),
 x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4410

```
Int[Cot[(a_.) + (b_.)*(x_)]^(p_.)*Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csc[a + b*x]^n)/(b*n), x]
+ Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csc[a + b*x]^n, x], x] /; FreeQ[{
a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int \frac{(e+fx)^2\cos^3(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)^2\cos^3(c+dx)\cot^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)^2\cos^4(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}}{a}$$

$$= -\frac{\int (e+fx)^2\cos^3(c+dx)\,dx}{a} + \frac{\int (e+fx)^2\cos(c+dx)\cot^2(c+dx)\,d}{a}$$

$$= -\frac{2f(e+fx)\cos^3(c+dx)}{9ad^2} - \frac{(e+fx)^2\cos^2(c+dx)\sin(c+dx)}{3ad} - \frac{2\int}{}$$

$$= -\frac{(e+fx)^2\csc(c+dx)}{ad} - \frac{5(e+fx)^2\sin(c+dx)}{3ad} + \frac{2\int (e+fx)^2\cos(c}{3a}$$

$$= \frac{ib(e+fx)^3}{3a^2f} - \frac{i\left(a^2-b^2\right)^2(e+fx)^3}{3a^2b^3f} - \frac{4f(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - \frac{1}{}$$

$$= \frac{ib(e+fx)^3}{3a^2f} - \frac{i\left(a^2-b^2\right)^2(e+fx)^3}{3a^2b^3f} - \frac{4f(e+fx)\tanh^{-1}\left(e^{i(c+dx)}\right)}{ad^2} - \frac{2}{}$$

$$= -\frac{befx}{2a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)efx}{2bd} - \frac{bf^2x^2}{4a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)f^2x^2}{4bd} + \frac{ib(e+fx)^3}{3a^2f} - \frac{i\left(a^2\right.}{}$$

$$= -\frac{befx}{2a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)efx}{2bd} - \frac{bf^2x^2}{4a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)f^2x^2}{4bd} + \frac{ib(e+fx)^3}{3a^2f} - \frac{i\left(a^2\right.}{}$$

$$= -\frac{befx}{2a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)efx}{2bd} - \frac{bf^2x^2}{4a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)f^2x^2}{4bd} + \frac{ib(e+fx)^3}{3a^2f} - \frac{i\left(a^2\right.}{}$$

Mathematica [B] time = 13.98, size = 5156, normalized size = 4.91

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((e + f*x)^2*Cos[c + d*x]^3*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),
x]
```

```
[Out] Result too large to show
```

fricas [C] time = 0.99, size = 3145, normalized size = 2.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="fricas")
```

```
[Out] -1/8*(8*b^4*f^2*polylog(3, cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 8*
b^4*f^2*polylog(3, cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + 8*b^4*f^2*
polylog(3, -cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) + 8*b^4*f^2*polylog
(3, -cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) + 8*(a^3*b + a*b^3)*d^2*f^
2*x^2 - 16*a^3*b*f^2 + 16*(a^3*b + a*b^3)*d^2*e*f*x + 8*(a^3*b + a*b^3)*d^2
*e^2 - 8*(a^4 - 2*a^2*b^2 + b^4)*f^2*polylog(3, 1/2*(2*I*a*cos(d*x + c) - 2
*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2))/b)*sin(d*x + c) - 8*(a^4 - 2*a^2*b^2 + b^4)*f^2*polylog(3, 1/2*(2*I*a*
cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - 8*(a^4 - 2*a^2*b^2 + b^4)*f^2*polylo
g(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*
sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) - 8*(a^4 - 2*a^2*b^2
+ b^4)*f^2*polylog(3, 1/2*(-2*I*a*cos(d*x + c) - 2*a*sin(d*x + c) - 2*(b*co
s(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2))/b)*sin(d*x + c) + 4*
(a^2*b^2*d*f^2*x + a^2*b^2*d*e*f)*cos(d*x + c)^3 - 8*(a^3*b*d^2*f^2*x^2 + 2
*a^3*b*d^2*e*f*x + a^3*b*d^2*e^2 - 2*a^3*b*f^2)*cos(d*x + c)^2 - (8*I*(a^4
- 2*a^2*b^2 + b^4)*d*f^2*x + 8*I*(a^4 - 2*a^2*b^2 + b^4)*d*e*f)*dilog(-1/2*
(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - (8*I*(a^4 - 2*a^2*b
^2 + b^4)*d*f^2*x + 8*I*(a^4 - 2*a^2*b^2 + b^4)*d*e*f)*dilog(-1/2*(2*I*a*co
s(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(
-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - (-8*I*(a^4 - 2*a^2*b^2 + b^4
)*d*f^2*x - 8*I*(a^4 - 2*a^2*b^2 + b^4)*d*e*f)*dilog(-1/2*(-2*I*a*cos(d*x +
 c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 -
 b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - (-8*I*(a^4 - 2*a^2*b^2 + b^4)*d*f^2
*x - 8*I*(a^4 - 2*a^2*b^2 + b^4)*d*e*f)*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2
*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b
^2) + 2*b)/b + 1)*sin(d*x + c) - (8*I*b^4*d*f^2*x + 8*I*b^4*d*e*f - 8*I*a*b
^3*f^2)*dilog(cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) - (-8*I*b^4*d*f^2
*x - 8*I*b^4*d*e*f + 8*I*a*b^3*f^2)*dilog(cos(d*x + c) - I*sin(d*x + c))*si
n(d*x + c) - (-8*I*b^4*d*f^2*x - 8*I*b^4*d*e*f - 8*I*a*b^3*f^2)*dilog(-cos(
d*x + c) + I*sin(d*x + c))*sin(d*x + c) - (8*I*b^4*d*f^2*x + 8*I*b^4*d*e*f
+ 8*I*a*b^3*f^2)*dilog(-cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - 4*((a
^4 - 2*a^2*b^2 + b^4)*d^2*e^2 - 2*(a^4 - 2*a^2*b^2 + b^4)*c*d*e*f + (a^4 -
2*a^2*b^2 + b^4)*c^2*f^2)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2*b*s
qrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*d^
2*e^2 - 2*(a^4 - 2*a^2*b^2 + b^4)*c*d*e*f + (a^4 - 2*a^2*b^2 + b^4)*c^2*f^2
)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) -
2*I*a)*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*d^2*e^2 - 2*(a^4 - 2*a^2*b
^2 + b^4)*c*d*e*f + (a^4 - 2*a^2*b^2 + b^4)*c^2*f^2)*log(-2*b*cos(d*x + c)
```

```
+ 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) - 4
*((a^4 - 2*a^2*b^2 + b^4)*d^2*e^2 - 2*(a^4 - 2*a^2*b^2 + b^4)*c*d*e*f + (a^
4 - 2*a^2*b^2 + b^4)*c^2*f^2)*log(-2*b*cos(d*x + c) - 2*I*b*sin(d*x + c) +
2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^
4)*d^2*f^2*x^2 + 2*(a^4 - 2*a^2*b^2 + b^4)*d^2*e*f*x + 2*(a^4 - 2*a^2*b^2 +
 b^4)*c*d*e*f - (a^4 - 2*a^2*b^2 + b^4)*c^2*f^2)*log(1/2*(2*I*a*cos(d*x + c
) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b
^2)/b^2) + 2*b)/b)*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*d^2*f^2*x^2 +
2*(a^4 - 2*a^2*b^2 + b^4)*d^2*e*f*x + 2*(a^4 - 2*a^2*b^2 + b^4)*c*d*e*f - (
a^4 - 2*a^2*b^2 + b^4)*c^2*f^2)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x +
 c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b
)*sin(d*x + c) - 4*((a^4 - 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^4 - 2*a^2*b^
2 + b^4)*d^2*e*f*x + 2*(a^4 - 2*a^2*b^2 + b^4)*c*d*e*f - (a^4 - 2*a^2*b^2 +
 b^4)*c^2*f^2)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d
*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) -
 4*((a^4 - 2*a^2*b^2 + b^4)*d^2*f^2*x^2 + 2*(a^4 - 2*a^2*b^2 + b^4)*d^2*e*f
*x + 2*(a^4 - 2*a^2*b^2 + b^4)*c*d*e*f - (a^4 - 2*a^2*b^2 + b^4)*c^2*f^2)*l
og(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*si
n(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + 4*(b^4*d^2*f^2*
x^2 + b^4*d^2*e^2 + 2*a*b^3*d*e*f + 2*(b^4*d^2*e*f + a*b^3*d*f^2)*x)*log(co
s(d*x + c) + I*sin(d*x + c) + 1)*sin(d*x + c) + 4*(b^4*d^2*f^2*x^2 + b^4*d^
2*e^2 + 2*a*b^3*d*e*f + 2*(b^4*d^2*e*f + a*b^3*d*f^2)*x)*log(cos(d*x + c) -
 I*sin(d*x + c) + 1)*sin(d*x + c) + 4*(b^4*d^2*e^2 - 2*(b^4*c + a*b^3)*d*e*
f + (b^4*c^2 + 2*a*b^3*c)*f^2)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) +
 1/2)*sin(d*x + c) + 4*(b^4*d^2*e^2 - 2*(b^4*c + a*b^3)*d*e*f + (b^4*c^2 +
2*a*b^3*c)*f^2)*log(-1/2*cos(d*x + c) - 1/2*I*sin(d*x + c) + 1/2)*sin(d*x +
 c) + 4*(b^4*d^2*f^2*x^2 + 2*b^4*c*d*e*f - (b^4*c^2 + 2*a*b^3*c)*f^2 + 2*(b
^4*d^2*e*f - a*b^3*d*f^2)*x)*log(-cos(d*x + c) + I*sin(d*x + c) + 1)*sin(d*
x + c) + 4*(b^4*d^2*f^2*x^2 + 2*b^4*c*d*e*f - (b^4*c^2 + 2*a*b^3*c)*f^2 + 2
*(b^4*d^2*e*f - a*b^3*d*f^2)*x)*log(-cos(d*x + c) - I*sin(d*x + c) + 1)*sin
(d*x + c) - 4*(a^2*b^2*d*f^2*x + a^2*b^2*d*e*f)*cos(d*x + c) - (2*a^2*b^2*d
^2*f^2*x^2 + 4*a^2*b^2*d^2*e*f*x + 2*a^2*b^2*d^2*e^2 - a^2*b^2*f^2 - 2*(2*a
^2*b^2*d^2*f^2*x^2 + 4*a^2*b^2*d^2*e*f*x + 2*a^2*b^2*d^2*e^2 - a^2*b^2*f^2)
*cos(d*x + c)^2 - 16*(a^3*b*d*f^2*x + a^3*b*d*e*f)*cos(d*x + c))*sin(d*x +
c))/(a^2*b^3*d^3*sin(d*x + c))
```

giac [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="giac")
```

```
[Out] Timed out
```

maple [F] time = 10.58, size = 0, normalized size = 0.00

$$\int \frac{\left(fx+e\right)^{2}\left(\cos^{3}\left(dx+c\right)\right)\left(\cot^{2}\left(dx+c\right)\right)}{a+b\sin\left(dx+c\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
[Out] int((f*x+e)^2*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm
="maxima")
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*cot(c + d*x)^2*(e + f*x)^2)/(a + b*sin(c + d*x)),x)
[Out] \text{Hanged}
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(e+fx\right)^{2}\cos^{3}\left(c+dx\right)\cot^{2}\left(c+dx\right)}{a+b\sin\left(c+dx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*cos(d*x+c)**3*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)**2*cos(c + d*x)**3*cot(c + d*x)**2/(a + b*sin(c + d*x)),
 x)
```

3.347 $\int \frac{(e+fx)\cos^3(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=641

$$-\frac{f\left(a^2-b^2\right)\cos(c+dx)}{ab^2d^2}+\frac{f\left(a^2-b^2\right)\sin(c+dx)\cos(c+dx)}{4a^2bd^2}+\frac{\left(a^2-b^2\right)(e+fx)\sin^2(c+dx)}{2a^2bd}-\frac{\left(a^2-b^2\right)(e+fx)}{ab^2d}$$

```
[Out] -1/4*b*f*x/a^2/d-1/4*(a^2-b^2)*f*x/a^2/b/d-1/2*I*(a^2-b^2)^2*(f*x+e)^2/a^2/
b^3/f+1/2*I*b*(f*x+e)^2/a^2/f-f*arctanh(cos(d*x+c))/a/d^2-f*cos(d*x+c)/a/d^
2-(a^2-b^2)*f*cos(d*x+c)/a/b^2/d^2-(f*x+e)*csc(d*x+c)/a/d-b*(f*x+e)*ln(1-ex
p(2*I*(d*x+c)))/a^2/d+(a^2-b^2)^2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a-(a^2-b
^2)^(1/2)))/a^2/b^3/d+(a^2-b^2)^2*(f*x+e)*ln(1-I*b*exp(I*(d*x+c))/(a+(a^2-b
^2)^(1/2)))/a^2/b^3/d+1/2*I*b*f*polylog(2,exp(2*I*(d*x+c)))/a^2/d^2-I*(a^2-
b^2)^2*f*polylog(2,I*b*exp(I*(d*x+c))/(a+(a^2-b^2)^(1/2)))/a^2/b^3/d^2-I*(a
^2-b^2)^2*f*polylog(2,I*b*exp(I*(d*x+c))/(a-(a^2-b^2)^(1/2)))/a^2/b^3/d^2-(
f*x+e)*sin(d*x+c)/a/d-(a^2-b^2)*(f*x+e)*sin(d*x+c)/a/b^2/d+1/4*b*f*cos(d*x+
c)*sin(d*x+c)/a^2/d^2+1/4*(a^2-b^2)*f*cos(d*x+c)*sin(d*x+c)/a^2/b/d^2+1/2*b
*(f*x+e)*sin(d*x+c)^2/a^2/d+1/2*(a^2-b^2)*(f*x+e)*sin(d*x+c)^2/a^2/b/d
```

Rubi [A] time = 1.23, antiderivative size = 641, normalized size of antiderivative = 1.00, number of steps used = 45, number of rules used = 17, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4543, 4408, 3310, 3296, 2638, 4410, 3770, 4405, 2635, 8, 4404, 3717, 2190, 2279, 2391, 4525, 4519}

$$-\frac{if\left(a^2-b^2\right)^2\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{a-\sqrt{a^2-b^2}}\right)}{a^2b^3d^2}-\frac{if\left(a^2-b^2\right)^2\text{PolyLog}\left(2,\frac{ibe^{i(c+dx)}}{\sqrt{a^2-b^2}+a}\right)}{a^2b^3d^2}+\frac{ibf\text{PolyLog}\left(2,e^{2i(c+dx)}\right)}{2a^2d^2}-\frac{f\left(a^2-b^2\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[((e + f*x)*Cos[c + d*x]^3*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(b*f*x)/(4*a^2*d) - ((a^2 - b^2)*f*x)/(4*a^2*b*d) + ((I/2)*b*(e + f*x)^2)/
(a^2*f) - ((I/2)*(a^2 - b^2)^2*(e + f*x)^2)/(a^2*b^3*f) - (f*ArcTanh[Cos[c
+ d*x]])/(a*d^2) - (f*Cos[c + d*x])/(a*d^2) - ((a^2 - b^2)*f*Cos[c + d*x])/
(a*b^2*d^2) - ((e + f*x)*Csc[c + d*x])/(a*d) + ((a^2 - b^2)^2*(e + f*x)*Log
[1 - (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^3*d) + ((a^2 - b^
2)^2*(e + f*x)*Log[1 - (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2])])/(a^2*b
^3*d) - (b*(e + f*x)*Log[1 - E^((2*I)*(c + d*x))])/(a^2*d) - (I*(a^2 - b^2)
^2*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a - Sqrt[a^2 - b^2])])/(a^2*b^3*d^2)
 - (I*(a^2 - b^2)^2*f*PolyLog[2, (I*b*E^(I*(c + d*x)))/(a + Sqrt[a^2 - b^2]
)])/(a^2*b^3*d^2) + ((I/2)*b*f*PolyLog[2, E^((2*I)*(c + d*x))])/(a^2*d^2) -
 ((e + f*x)*Sin[c + d*x])/(a*d) - ((a^2 - b^2)*(e + f*x)*Sin[c + d*x])/(a*b
```

```
^2*d) + (b*f*Cos[c + d*x]*Sin[c + d*x])/(4*a^2*d^2) + ((a^2 - b^2)*f*Cos[c
+ d*x]*Sin[c + d*x])/(4*a^2*b*d^2) + (b*(e + f*x)*Sin[c + d*x]^2)/(2*a^2*d)
 + ((a^2 - b^2)*(e + f*x)*Sin[c + d*x]^2)/(2*a^2*b*d)
```

Rule 8

```
Int[a_, x_Symbol] :> Simp[a*x, x] /; FreeQ[a, x]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 2635

```
Int[((b_.)*sin[(c_.) + (d_.)*(x_)])^(n_), x_Symbol] :> -Simp[(b*Cos[c + d*x
]*(b*Sin[c + d*x])^(n - 1))/(d*n), x] + Dist[(b^2*(n - 1))/n, Int[(b*Sin[c
+ d*x])^(n - 2), x], x] /; FreeQ[{b, c, d}, x] && GtQ[n, 1] && IntegerQ[2*n
]
```

Rule 2638

```
Int[sin[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[Cos[c + d*x]/d, x] /; FreeQ
[{c, d}, x]
```

Rule 3296

```
Int[((c_.) + (d_.)*(x_))^(m_.)*sin[(e_.) + (f_.)*(x_)], x_Symbol] :> -Simp[
((c + d*x)^m*Cos[e + f*x])/f, x] + Dist[(d*m)/f, Int[(c + d*x)^(m - 1)*Cos[
e + f*x], x], x] /; FreeQ[{c, d, e, f}, x] && GtQ[m, 0]
```

Rule 3310

```
Int[((c_.) + (d_.)*(x_))*((b_.)*sin[(e_.) + (f_.)*(x_)])^(n_), x_Symbol] :>
 Simp[(d*(b*Sin[e + f*x])^n)/(f^2*n^2), x] + (Dist[(b^2*(n - 1))/n, Int[(c
+ d*x)*(b*Sin[e + f*x])^(n - 2), x], x] - Simp[(b*(c + d*x)*Cos[e + f*x]*(b
*Sin[e + f*x])^(n - 1))/(f*n), x]) /; FreeQ[{b, c, d, e, f}, x] && GtQ[n, 1
]
```

Rule 3717

```
Int[((c_.) + (d_.)*(x_))^(m_.)*tan[(e_.) + Pi*(k_.) + (f_.)*(x_)], x_Symbol
] :> Simp[(I*(c + d*x)^(m + 1))/(d*(m + 1)), x] - Dist[2*I, Int[((c + d*x)^
m*E^(2*I*k*Pi)*E^(2*I*(e + f*x)))/(1 + E^(2*I*k*Pi)*E^(2*I*(e + f*x))), x],
 x] /; FreeQ[{c, d, e, f}, x] && IntegerQ[4*k] && IGtQ[m, 0]
```

Rule 3770

```
Int[csc[(c_.) + (d_.)*(x_)], x_Symbol] :> -Simp[ArcTanh[Cos[c + d*x]]/d, x]
 /; FreeQ[{c, d}, x]
```

Rule 4404

```
Int[Cos[(a_.) + (b_.)*(x_)]*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b_.)*(x
_)]^(n_.), x_Symbol] :> Simp[((c + d*x)^m*Sin[a + b*x]^(n + 1))/(b*(n + 1))
, x] - Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Sin[a + b*x]^(n + 1),
x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4405

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d_.)*(x_))^(m_.)*Sin[(a_.) + (b
_.)*(x_)], x_Symbol] :> -Simp[((c + d*x)^m*Cos[a + b*x]^(n + 1))/(b*(n + 1)
), x] + Dist[(d*m)/(b*(n + 1)), Int[(c + d*x)^(m - 1)*Cos[a + b*x]^(n + 1),
 x], x] /; FreeQ[{a, b, c, d, n}, x] && IGtQ[m, 0] && NeQ[n, -1]
```

Rule 4408

```
Int[Cos[(a_.) + (b_.)*(x_)]^(n_.)*Cot[(a_.) + (b_.)*(x_)]^(p_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Int[(c + d*x)^m*Cos[a + b*x]^n*Cot[a + b*x]^
(p - 2), x] + Int[(c + d*x)^m*Cos[a + b*x]^(n - 2)*Cot[a + b*x]^p, x] /; Fr
eeQ[{a, b, c, d, m}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 4410

```
Int[Cot[(a_.) + (b_.)*(x_)]^(p_.)*Csc[(a_.) + (b_.)*(x_)]^(n_.)*((c_.) + (d
_.)*(x_))^(m_.), x_Symbol] :> -Simp[((c + d*x)^m*Csc[a + b*x]^n)/(b*n), x]
```

```
+ Dist[(d*m)/(b*n), Int[(c + d*x)^(m - 1)*Csc[a + b*x]^n, x], x] /; FreeQ[{
a, b, c, d, n}, x] && EqQ[p, 1] && GtQ[m, 0]
```

Rule 4519

```
Int[(Cos[(c_.) + (d_.)*(x_)]*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[
(c_.) + (d_.)*(x_)]), x_Symbol] :> -Simp[(I*(e + f*x)^(m + 1))/(b*f*(m + 1)
), x] + (Int[((e + f*x)^m*E^(I*(c + d*x)))/(a - Rt[a^2 - b^2, 2] - I*b*E^(I
*(c + d*x))), x] + Int[((e + f*x)^m*E^(I*(c + d*x)))/(a + Rt[a^2 - b^2, 2]
- I*b*E^(I*(c + d*x))), x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] &
& PosQ[a^2 - b^2]
```

Rule 4525

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(n_)*((e_.) + (f_.)*(x_))^(m_.))/((a_) + (b_.)
*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist[a/b^2, Int[(e + f*x)^m*Cos[c +
 d*x]^(n - 2), x], x] + (-Dist[1/b, Int[(e + f*x)^m*Cos[c + d*x]^(n - 2)*Si
n[c + d*x], x], x] - Dist[(a^2 - b^2)/b^2, Int[((e + f*x)^m*Cos[c + d*x]^(n
 - 2))/(a + b*Sin[c + d*x]), x], x]) /; FreeQ[{a, b, c, d, e, f}, x] && IGt
Q[n, 1] && NeQ[a^2 - b^2, 0] && IGtQ[m, 0]
```

Rule 4543

```
Int[(Cos[(c_.) + (d_.)*(x_)]^(p_.)*Cot[(c_.) + (d_.)*(x_)]^(n_.)*((e_.) + (
f_.)*(x_))^(m_.))/((a_) + (b_.)*Sin[(c_.) + (d_.)*(x_)]), x_Symbol] :> Dist
[1/a, Int[(e + f*x)^m*Cos[c + d*x]^p*Cot[c + d*x]^n, x], x] - Dist[b/a, Int
[((e + f*x)^m*Cos[c + d*x]^(p + 1)*Cot[c + d*x]^(n - 1))/(a + b*Sin[c + d*x
]), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && IGtQ[n, 0] && I
GtQ[p, 0]
```

Rubi steps

$$\int \frac{(e+fx)\cos^3(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\int (e+fx)\cos^3(c+dx)\cot^2(c+dx)\,dx}{a} - \frac{b\int \frac{(e+fx)\cos^4(c+dx)\cot(c+dx)}{a+b\sin(c+dx)}\,dx}{a}$$

$$= -\frac{\int (e+fx)\cos^3(c+dx)\,dx}{a} + \frac{\int (e+fx)\cos(c+dx)\cot^2(c+dx)\,dx}{a} -$$

$$= -\frac{f\cos^3(c+dx)}{9ad^2} - \frac{(e+fx)\cos^2(c+dx)\sin(c+dx)}{3ad} - \frac{2\int (e+fx)\cos}{3a}$$

$$= -\frac{(e+fx)\csc(c+dx)}{ad} - \frac{5(e+fx)\sin(c+dx)}{3ad} + \frac{2\int (e+fx)\cos(c+d}{3a}$$

$$= \frac{ib(e+fx)^2}{2a^2f} - \frac{i\left(a^2-b^2\right)^2(e+fx)^2}{2a^2b^3f} - \frac{f\tanh^{-1}(\cos(c+dx))}{ad^2} - \frac{5f\cos}{3a}$$

$$= \frac{ib(e+fx)^2}{2a^2f} - \frac{i\left(a^2-b^2\right)^2(e+fx)^2}{2a^2b^3f} - \frac{f\tanh^{-1}(\cos(c+dx))}{ad^2} - \frac{f\cos(}{ad}$$

$$= -\frac{bfx}{4a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)fx}{4bd} + \frac{ib(e+fx)^2}{2a^2f} - \frac{i\left(a^2-b^2\right)^2(e+fx)^2}{2a^2b^3f} - \frac{f\tanh^{-}}{}$$

$$= -\frac{bfx}{4a^2d} - \frac{\left(1-\frac{b^2}{a^2}\right)fx}{4bd} + \frac{ib(e+fx)^2}{2a^2f} - \frac{i\left(a^2-b^2\right)^2(e+fx)^2}{2a^2b^3f} - \frac{f\tanh^{-}}{}$$

Mathematica [B] time = 15.41, size = 2504, normalized size = 3.91

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e + f*x)*Cos[c + d*x]^3*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -((a*f*Cos[c + d*x])/(b^2*d^2)) - ((d*e - c*f + f*(c + d*x))*Cos[2*(c + d*x
)])/(4*b*d^2) + ((-(d*e*Cos[(c + d*x)/2]) + c*f*Cos[(c + d*x)/2] - f*(c + d
*x)*Cos[(c + d*x)/2])*Csc[(c + d*x)/2])/(2*a*d^2) - (b*e*Log[Sin[c + d*x]])
/(a^2*d) + (b*c*f*Log[Sin[c + d*x]])/(a^2*d^2) + (f*Log[Tan[(c + d*x)/2]])/
(a*d^2) - (b*f*((c + d*x)*Log[1 - E^((2*I)*(c + d*x))] - (I/2)*((c + d*x)^2
 + PolyLog[2, E^((2*I)*(c + d*x))])))/(a^2*d^2) + (Sec[(c + d*x)/2]*(-(d*e*
Sin[(c + d*x)/2]) + c*f*Sin[(c + d*x)/2] - f*(c + d*x)*Sin[(c + d*x)/2]))/(
2*a*d^2) - (a*(d*e - c*f + f*(c + d*x))*Sin[c + d*x])/(b^2*d^2) + (f*Sin[2*
(c + d*x)])/(8*b*d^2) + ((f*(c + d*x)^2 + (2*I)*d*e*Log[Sec[(c + d*x)/2]^2]
```

- (2*I)*c*f*Log[Sec[(c + d*x)/2]^2] - (2*I)*d*e*Log[Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])] + (2*I)*c*f*Log[Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])] - (4*I)*f*(c + d*x)*Log[(-2*I)/(-I + Tan[(c + d*x)/2])] - 2*f*Log[1 + I*Tan[(c + d*x)/2]]*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])] + 2*f*Log[1 - I*Tan[(c + d*x)/2]]*Log[-((b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2]))] + 2*f*Log[1 - I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])] - 2*f*Log[1 + I*Tan[(c + d*x)/2]]*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])] + 4*f*PolyLog[2, -Cos[c + d*x] + I*Sin[c + d*x]] + 2*f*PolyLog[2, (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))] - 2*f*PolyLog[2, (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))] + 2*f*PolyLog[2, (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])] - 2*f*PolyLog[2, (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))]])*((-2*e*Cos[c + d*x])/(a + b*Sin[c + d*x]) + (a^2*e*Cos[c + d*x])/(b^2*(a + b*Sin[c + d*x])) + (b^2*e*Cos[c + d*x])/(a^2*(a + b*Sin[c + d*x])) + (2*c*f*Cos[c + d*x])/(d*(a + b*Sin[c + d*x])) - (a^2*c*f*Cos[c + d*x])/(b^2*d*(a + b*Sin[c + d*x])) - (b^2*c*f*Cos[c + d*x])/(a^2*d*(a + b*Sin[c + d*x])) - (2*f*(c + d*x)*Cos[c + d*x])/(d*(a + b*Sin[c + d*x])) + (a^2*f*(c + d*x)*Cos[c + d*x])/(b^2*d*(a + b*Sin[c + d*x])) + (b^2*f*(c + d*x)*Cos[c + d*x])/(a^2*d*(a + b*Sin[c + d*x]))))/(d*(2*f*(c + d*x) - (4*I)*f*Log[(-2*I)/(-I + Tan[(c + d*x)/2])] - (4*f*Log[1 + Cos[c + d*x] - I*Sin[c + d*x]]*(I*Cos[c + d*x] + Sin[c + d*x]))/(-Cos[c + d*x] + I*Sin[c + d*x]) + (I*f*Log[1 - (a*(1 - I*Tan[(c + d*x)/2]))/(a + I*(b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) - (I*f*Log[-((b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a - b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) - (I*f*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/((-I)*a + b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 - I*Tan[(c + d*x)/2]) + (I*f*Log[1 - (a*(1 + I*Tan[(c + d*x)/2]))/(a - I*(b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) - (I*f*Log[(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b - Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) - (I*f*Log[(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2])/(I*a + b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(1 + I*Tan[(c + d*x)/2]) + (2*I)*d*e*Tan[(c + d*x)/2] - (2*I)*c*f*Tan[(c + d*x)/2] + ((2*I)*f*(c + d*x)*Sec[(c + d*x)/2]^2)/(-I + Tan[(c + d*x)/2]) - (f*Log[1 - (a*(I + Tan[(c + d*x)/2]))/(I*a - b + Sqrt[-a^2 + b^2])]*Sec[(c + d*x)/2]^2)/(I + Tan[(c + d*x)/2]) + (I*a*f*Log[1 - (a + I*a*Tan[(c + d*x)/2])/(a + I*(-b + Sqrt[-a^2 + b^2]))]*Sec[(c + d*x)/2]^2)/(a + I*a*Tan[(c + d*x)/2]) + (a*f*Log[1 - I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) - (a*f*Log[1 + I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b - Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) + (a*f*Log[1 - I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) - (a*f*Log[1 + I*Tan[(c + d*x)/2]]*Sec[(c + d*x)/2]^2)/(b + Sqrt[-a^2 + b^2] + a*Tan[(c + d*x)/2]) - ((2*I)*d*e*Cos[(c + d*x)/2]^2*(b*Cos[c + d*x]*Sec[(c + d*x)/2]^2 + Sec[(c + d*x)/2]^2*(a + b*Sin[c + d*x])*Tan[(c + d*x)/2]))/(a + b*Sin[c + d*x]) + ((2*I)*c*f*Cos[(c + d*x)/2

```
]^2*(b*Cos[c + d*x]*Sec[(c + d*x)/2]^2 + Sec[(c + d*x)/2]^2*(a + b*Sin[c +
d*x])*Tan[(c + d*x)/2]))/(a + b*Sin[c + d*x])))
```

fricas [B] time = 0.85, size = 1715, normalized size = 2.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
fricas")
```

```
[Out] -1/4*(a^2*b^2*f*cos(d*x + c)^3 - 2*I*b^4*f*dilog(cos(d*x + c) + I*sin(d*x +
 c))*sin(d*x + c) + 2*I*b^4*f*dilog(cos(d*x + c) - I*sin(d*x + c))*sin(d*x
+ c) + 2*I*b^4*f*dilog(-cos(d*x + c) + I*sin(d*x + c))*sin(d*x + c) - 2*I*b
^4*f*dilog(-cos(d*x + c) - I*sin(d*x + c))*sin(d*x + c) - a^2*b^2*f*cos(d*x
 + c) + 4*(a^3*b + a*b^3)*d*f*x - 2*I*(a^4 - 2*a^2*b^2 + b^4)*f*dilog(-1/2*
(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x +
c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) - 2*I*(a^4 - 2*a^2*b^
2 + b^4)*f*dilog(-1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x
 + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c)
 + 2*I*(a^4 - 2*a^2*b^2 + b^4)*f*dilog(-1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(
d*x + c) + 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2
*b)/b + 1)*sin(d*x + c) + 2*I*(a^4 - 2*a^2*b^2 + b^4)*f*dilog(-1/2*(-2*I*a*
cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sqr
t(-(a^2 - b^2)/b^2) + 2*b)/b + 1)*sin(d*x + c) + 4*(a^3*b + a*b^3)*d*e - 4*
(a^3*b*d*f*x + a^3*b*d*e)*cos(d*x + c)^2 - 2*((a^4 - 2*a^2*b^2 + b^4)*d*e -
 (a^4 - 2*a^2*b^2 + b^4)*c*f)*log(2*b*cos(d*x + c) + 2*I*b*sin(d*x + c) + 2
*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) - 2*((a^4 - 2*a^2*b^2 + b^4
)*d*e - (a^4 - 2*a^2*b^2 + b^4)*c*f)*log(2*b*cos(d*x + c) - 2*I*b*sin(d*x +
 c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) - 2*((a^4 - 2*a^2*b^
2 + b^4)*d*e - (a^4 - 2*a^2*b^2 + b^4)*c*f)*log(-2*b*cos(d*x + c) + 2*I*b*s
in(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) + 2*I*a)*sin(d*x + c) - 2*((a^4 -
2*a^2*b^2 + b^4)*d*e - (a^4 - 2*a^2*b^2 + b^4)*c*f)*log(-2*b*cos(d*x + c) -
 2*I*b*sin(d*x + c) + 2*b*sqrt(-(a^2 - b^2)/b^2) - 2*I*a)*sin(d*x + c) - 2*
((a^4 - 2*a^2*b^2 + b^4)*d*f*x + (a^4 - 2*a^2*b^2 + b^4)*c*f)*log(1/2*(2*I*
a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*s
qrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 2*((a^4 - 2*a^2*b^2 + b^4)*d
*f*x + (a^4 - 2*a^2*b^2 + b^4)*c*f)*log(1/2*(2*I*a*cos(d*x + c) + 2*a*sin(d
*x + c) - 2*(b*cos(d*x + c) - I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*
b)/b)*sin(d*x + c) - 2*((a^4 - 2*a^2*b^2 + b^4)*d*f*x + (a^4 - 2*a^2*b^2 +
b^4)*c*f)*log(1/2*(-2*I*a*cos(d*x + c) + 2*a*sin(d*x + c) + 2*(b*cos(d*x +
c) + I*b*sin(d*x + c))*sqrt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) - 2*((
a^4 - 2*a^2*b^2 + b^4)*d*f*x + (a^4 - 2*a^2*b^2 + b^4)*c*f)*log(1/2*(-2*I*a
*cos(d*x + c) + 2*a*sin(d*x + c) - 2*(b*cos(d*x + c) + I*b*sin(d*x + c))*sq
rt(-(a^2 - b^2)/b^2) + 2*b)/b)*sin(d*x + c) + 2*(b^4*d*f*x + b^4*d*e + a*b^
```

```
3*f)*log(cos(d*x + c) + I*sin(d*x + c) + 1)*sin(d*x + c) + 2*(b^4*d*f*x + b
^4*d*e + a*b^3*f)*log(cos(d*x + c) - I*sin(d*x + c) + 1)*sin(d*x + c) + 2*(
b^4*d*e - (b^4*c + a*b^3)*f)*log(-1/2*cos(d*x + c) + 1/2*I*sin(d*x + c) + 1
/2)*sin(d*x + c) + 2*(b^4*d*e - (b^4*c + a*b^3)*f)*log(-1/2*cos(d*x + c) -
1/2*I*sin(d*x + c) + 1/2)*sin(d*x + c) + 2*(b^4*d*f*x + b^4*c*f)*log(-cos(d
*x + c) + I*sin(d*x + c) + 1)*sin(d*x + c) + 2*(b^4*d*f*x + b^4*c*f)*log(-c
os(d*x + c) - I*sin(d*x + c) + 1)*sin(d*x + c) - (a^2*b^2*d*f*x + a^2*b^2*d
*e - 4*a^3*b*f*cos(d*x + c) - 2*(a^2*b^2*d*f*x + a^2*b^2*d*e)*cos(d*x + c)^
2)*sin(d*x + c))/(a^2*b^3*d^2*sin(d*x + c))
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
giac")
```

```
[Out] Timed out
```

maple [B] time = 4.22, size = 2449, normalized size = 3.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] 1/d/b^3*a^2*e*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)-2/d/b^3*a^2*e
*ln(exp(I*(d*x+c)))+2/d^2/b*f*c*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-
I*b)-4/d^2/b*f*c*ln(exp(I*(d*x+c)))+4*I/b/d*c*f*x+1/a^2*b/d*e*ln(I*b*exp(2*
I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)+2*I/b/d^2*c^2*f-1/2*I/b^3*a^2*f*x^2-2/d/
b*e*ln(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)+4/d/b*ln(exp(I*(d*x+c))
)*e-1/a^2/d*b*f*ln(exp(I*(d*x+c))+1)*x+1/a^2/d^2*b*f*c*ln(exp(I*(d*x+c))-1)
-I/a^2/d^2*b*f*dilog(exp(I*(d*x+c)))-1/a/d^2*f*ln(exp(I*(d*x+c))+1)+1/a/d^2
*f*ln(exp(I*(d*x+c))-1)+3/d/b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b
^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a^2*x+3/d^2/b*f/(-a^2+b^2)*ln((I*a+b*exp
(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a^2*c-3/d*b*f/(-a^2+b
^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-3/
d^2*b*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^
2)^(1/2)))*c-1/a^2/d*b*e*ln(exp(I*(d*x+c))+1)-1/a^2/d*b*e*ln(exp(I*(d*x+c))
-1)-3*b/d*f/(-a^2+b^2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-
a^2+b^2)^(1/2)))*x+I/a^2*b/d^2*f*dilog(exp(I*(d*x+c))+1)-1/a^2*b/d^2*f*c*ln
(I*b*exp(2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)-3*b/d^2*f/(-a^2+b^2)*ln((-I*a
-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*c-I/d^2/b^3*a^
```

```
2*f*c^2+3*I*b/d^2*f/(-a^2+b^2)*dilog((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2
))/(-I*a+(-a^2+b^2)^(1/2)))+3*I*b/d^2*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+
c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-1/d^2/b^3*a^2*f*c*ln(I*b*exp(
2*I*(d*x+c))-2*a*exp(I*(d*x+c))-I*b)+2/d^2/b^3*a^2*f*c*ln(exp(I*(d*x+c)))+3
*a^2/b/d^2*f/(-a^2+b^2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(
-a^2+b^2)^(1/2)))*c+1/a^2*b^3/d^2*f/(-a^2+b^2)*ln((-I*a-b*exp(I*(d*x+c))+(-
a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*c+1/a^2*b^3/d^2*f/(-a^2+b^2)*ln((I
*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*c-a^4/b^3/d*f
/(-a^2+b^2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1
/2)))*x-2*I*a^2/b^3/d*c*f*x-I/a^2*b^3/d^2*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(
d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-I/a^2*b^3/d^2*f/(-a^2+b^2
)*dilog((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))-3
*I*a^2/b/d^2*f/(-a^2+b^2)*dilog((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-
I*a+(-a^2+b^2)^(1/2)))-3*I/d^2/b*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))+(
-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*a^2-1/16*(2*d*f*x+I*f+2*d*e)/b/d^2
*exp(2*I*(d*x+c))-1/16*(2*d*f*x-I*f+2*d*e)/b/d^2*exp(-2*I*(d*x+c))+3*a^2/b/
d*f/(-a^2+b^2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)
^(1/2)))*x+1/a^2*b^3/d*f/(-a^2+b^2)*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1
/2))/(-I*a+(-a^2+b^2)^(1/2)))*x+1/a^2*b^3/d*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d
*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-a^4/b^3/d^2*f/(-a^2+b^2)
*ln((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*a+(-a^2+b^2)^(1/2)))*c+I*a
^4/b^3/d^2*f/(-a^2+b^2)*dilog((-I*a-b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(-I*
a+(-a^2+b^2)^(1/2)))+I*a^4/b^3/d^2*f/(-a^2+b^2)*dilog((I*a+b*exp(I*(d*x+c))
+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))-1/d/b^3*a^4*f/(-a^2+b^2)*ln((I*a
+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1/2)))*x-1/d^2/b^3*a^4
*f/(-a^2+b^2)*ln((I*a+b*exp(I*(d*x+c))+(-a^2+b^2)^(1/2))/(I*a+(-a^2+b^2)^(1
/2)))*c-1/2*I*a*(d*f*x-I*f+d*e)/b^2/d^2*exp(-I*(d*x+c))-2*I*(f*x+e)*exp(I*(
d*x+c))/d/a/(exp(2*I*(d*x+c))-1)+1/2*I*a*(d*f*x+I*f+d*e)/b^2/d^2*exp(I*(d*x
+c))+I/b*f*x^2-2*I/b*e*x+I/b^3*a^2*e*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="
maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*cot(c + d*x)^2*(e + f*x))/(a + b*sin(c + d*x)),x)
[Out] \text{Hanged}
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(e+fx)\cos^3(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*cos(d*x+c)**3*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
[Out] Integral((e + f*x)*cos(c + d*x)**3*cot(c + d*x)**2/(a + b*sin(c + d*x)), x)
```

3.348 $\int \frac{\cos^3(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx$

Optimal. Leaf size=96

$$\frac{(a^2-b^2)^2\log(a+b\sin(c+dx))}{a^2b^3d}-\frac{b\log(\sin(c+dx))}{a^2d}-\frac{a\sin(c+dx)}{b^2d}-\frac{\csc(c+dx)}{ad}+\frac{\sin^2(c+dx)}{2bd}$$

```
[Out] -csc(d*x+c)/a/d-b*ln(sin(d*x+c))/a^2/d+(a^2-b^2)^2*ln(a+b*sin(d*x+c))/a^2/b
^3/d-a*sin(d*x+c)/b^2/d+1/2*sin(d*x+c)^2/b/d
```

Rubi [A] time = 0.16, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {2837, 12, 894}

$$\frac{(a^2-b^2)^2\log(a+b\sin(c+dx))}{a^2b^3d}-\frac{b\log(\sin(c+dx))}{a^2d}-\frac{a\sin(c+dx)}{b^2d}-\frac{\csc(c+dx)}{ad}+\frac{\sin^2(c+dx)}{2bd}$$

Antiderivative was successfully verified.

```
[In] Int[(Cos[c + d*x]^3*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] -(Csc[c + d*x]/(a*d)) - (b*Log[Sin[c + d*x]])/(a^2*d) + ((a^2 - b^2)^2*Log[
a + b*Sin[c + d*x]])/(a^2*b^3*d) - (a*Sin[c + d*x])/(b^2*d) + Sin[c + d*x]^
2/(2*b*d)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 894

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^
2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)^n*(a + c*x
^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ[c
*d^2 + a*e^2, 0] && IntegerQ[p] && ((EqQ[p, 1] && IntegersQ[m, n]) || (ILtQ
[m, 0] && ILtQ[n, 0]))
```

Rule 2837

```
Int[cos[(e_.) + (f_.)*(x_)]^(p_)*((a_) + (b_.)*sin[(e_.) + (f_.)*(x_)])^(m_
.)*((c_.) + (d_.)*sin[(e_.) + (f_.)*(x_)])^(n_.), x_Symbol] :> Dist[1/(b^p*
f), Subst[Int[(a + x)^m*(c + (d*x)/b)^n*(b^2 - x^2)^((p - 1)/2), x], x, b*S
in[e + f*x]], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IntegerQ[(p - 1)/
```

```
2] && NeQ[a^2 - b^2, 0]
```

Rubi steps

$$\int \frac{\cos^3(c+dx)\cot^2(c+dx)}{a+b\sin(c+dx)}\,dx = \frac{\text{Subst}\left(\int \frac{b^2\left(b^2-x^2\right)^2}{x^2(a+x)}\,dx, x, b\sin(c+dx)\right)}{b^5 d}$$
$$= \frac{\text{Subst}\left(\int \frac{\left(b^2-x^2\right)^2}{x^2(a+x)}\,dx, x, b\sin(c+dx)\right)}{b^3 d}$$
$$= \frac{\text{Subst}\left(\int \left(-a+\frac{b^4}{ax^2}-\frac{b^4}{a^2x}+x+\frac{\left(a^2-b^2\right)^2}{a^2(a+x)}\right)dx, x, b\sin(c+dx)\right)}{b^3 d}$$
$$= -\frac{\csc(c+dx)}{ad}-\frac{b\log(\sin(c+dx))}{a^2d}+\frac{\left(a^2-b^2\right)^2\log(a+b\sin(c+dx))}{a^2b^3d}-\frac{a\sin}{}$$

Mathematica [A] time = 0.21, size = 86, normalized size = 0.90

$$\frac{\frac{2\left(a^2-b^2\right)^2\log(a+b\sin(c+dx))}{a^2b^3}-\frac{2b\log(\sin(c+dx))}{a^2}-\frac{2a\sin(c+dx)}{b^2}-\frac{2\csc(c+dx)}{a}+\frac{\sin^2(c+dx)}{b}}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Cos[c + d*x]^3*Cot[c + d*x]^2)/(a + b*Sin[c + d*x]),x]
```

```
[Out] ((-2*Csc[c + d*x])/a - (2*b*Log[Sin[c + d*x]])/a^2 + (2*(a^2 - b^2)^2*Log[a
 + b*Sin[c + d*x]])/(a^2*b^3) - (2*a*Sin[c + d*x])/b^2 + Sin[c + d*x]^2/b)/
(2*d)
```

fricas [A] time = 0.56, size = 133, normalized size = 1.39

$$\frac{4\,a^3b\cos\left(dx+c\right)^2-4\,b^4\log\left(\frac{1}{2}\,\sin\left(dx+c\right)\right)\sin\left(dx+c\right)-4\,a^3b-4\,ab^3+4\left(a^4-2\,a^2b^2+b^4\right)\log\left(b\sin\left(dx+\right.\right.}{4\,a^2b^3d\sin\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(4*a^3*b*cos(d*x + c)^2 - 4*b^4*log(1/2*sin(d*x + c))*sin(d*x + c) - 4*
a^3*b - 4*a*b^3 + 4*(a^4 - 2*a^2*b^2 + b^4)*log(b*sin(d*x + c) + a)*sin(d*x
```

```
 + c) - (2*a^2*b^2*cos(d*x + c)^2 - a^2*b^2)*sin(d*x + c))/(a^2*b^3*d*sin(d
*x + c))
```

giac [A] time = 1.91, size = 105, normalized size = 1.09

$$-\frac{\frac{2\,b\log(|\sin(dx+c)|)}{a^2}-\frac{b\sin(dx+c)^2-2\,a\sin(dx+c)}{b^2}-\frac{2\,(b\sin(dx+c)-a)}{a^2\sin(dx+c)}-\frac{2\left(a^4-2\,a^2b^2+b^4\right)\log(|b\sin(dx+c)+a|)}{a^2b^3}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="giac")
```

```
[Out] -1/2*(2*b*log(abs(sin(d*x + c)))/a^2 - (b*sin(d*x + c)^2 - 2*a*sin(d*x + c)
)/b^2 - 2*(b*sin(d*x + c) - a)/(a^2*sin(d*x + c)) - 2*(a^4 - 2*a^2*b^2 + b^
4)*log(abs(b*sin(d*x + c) + a))/(a^2*b^3))/d
```

maple [A] time = 0.17, size = 124, normalized size = 1.29

$$\frac{\sin^2(dx+c)}{2bd}-\frac{a\sin(dx+c)}{b^2d}+\frac{\ln(a+b\sin(dx+c))\,a^2}{d\,b^3}-\frac{2\ln(a+b\sin(dx+c))}{bd}+\frac{b\ln(a+b\sin(dx+c))}{d\,a^2}-\frac{}{da\sin}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x)
```

```
[Out] 1/2*sin(d*x+c)^2/b/d-a*sin(d*x+c)/b^2/d+1/d/b^3*ln(a+b*sin(d*x+c))*a^2-2*ln
(a+b*sin(d*x+c))/b/d+1/d/a^2*b*ln(a+b*sin(d*x+c))-1/d/a/sin(d*x+c)-b*ln(sin
(d*x+c))/a^2/d
```

maxima [A] time = 0.75, size = 91, normalized size = 0.95

$$-\frac{\frac{2\,b\log(\sin(dx+c))}{a^2}-\frac{b\sin(dx+c)^2-2\,a\sin(dx+c)}{b^2}+\frac{2}{a\sin(dx+c)}-\frac{2\left(a^4-2\,a^2b^2+b^4\right)\log(b\sin(dx+c)+a)}{a^2b^3}}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)^3*cot(d*x+c)^2/(a+b*sin(d*x+c)),x, algorithm="maxima")
```

```
[Out] -1/2*(2*b*log(sin(d*x + c))/a^2 - (b*sin(d*x + c)^2 - 2*a*sin(d*x + c))/b^2
 + 2/(a*sin(d*x + c)) - 2*(a^4 - 2*a^2*b^2 + b^4)*log(b*sin(d*x + c) + a)/(
a^2*b^3))/d
```

mupad [B] time = 5.05, size = 233, normalized size = 2.43

$$\frac{\ln\left(a\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^2+2\,b\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)+a\right)\left(a^2-b^2\right)^2}{a^2\,b^3\,d}-\frac{\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)}{2\,a\,d}-\frac{\ln\left(\tan\left(\frac{c}{2}+\frac{d\,x}{2}\right)^2+1\right)\left(a^2-2\,b^2\right)}{b^3\,d}-\frac{b\,\ln\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((cos(c + d*x)^3*cot(c + d*x)^2)/(a + b*sin(c + d*x)),x)
```

```
[Out] (log(a + 2*b*tan(c/2 + (d*x)/2) + a*tan(c/2 + (d*x)/2)^2)*(a^2 - b^2)^2)/(a
^2*b^3*d) - tan(c/2 + (d*x)/2)/(2*a*d) - (log(tan(c/2 + (d*x)/2)^2 + 1)*(a^
2 - 2*b^2))/(b^3*d) - (b*log(tan(c/2 + (d*x)/2)))/(a^2*d) - ((2*tan(c/2 + (
d*x)/2)^2*(2*a^2 + b^2))/b^2 + (tan(c/2 + (d*x)/2)^4*(4*a^2 + b^2))/b^2 - (
4*a*tan(c/2 + (d*x)/2)^3)/b + 1)/(d*(2*a*tan(c/2 + (d*x)/2) + 4*a*tan(c/2 +
 (d*x)/2)^3 + 2*a*tan(c/2 + (d*x)/2)^5))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(cos(d*x+c)**3*cot(d*x+c)**2/(a+b*sin(d*x+c)),x)
```

```
[Out] Timed out
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*          GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
```

```
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
```

```
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]


AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
```

```
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
   debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
   ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
           print("ExpnType_result<=ExpnType_optimal");
      fi;
```

```
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do not
    as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
```

```
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
```

```
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:

AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:
```

```
#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]
```

```
def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)
   ))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
   ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or type
   (expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
```

```
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
   expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType,
   Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
   well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
```

```
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug=False
    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
   sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','hypergeometric_U
   ']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in
   sagemath

def is_atom(expn):

    debug=False
    if debug: print ("Enter is_atom")


    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
   sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
```

```
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens"):
            return expn in expn.parent().base_ring() or expn in expn.parent().
    gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
    Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer)
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
    Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
    Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
    [1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
    isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
```

```
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn.
    func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(
    expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #
    is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "
    leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",
    expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
```

```
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
        else: #result contains complex but optimal is not
            return "C"
    else: # result do not contain complex, this assumes optimal do not as
well
        if leaf_count_result <= 2*leaf_count_optimal:
            return "A"
        else:
            return "B"
else:
    return "C"
```